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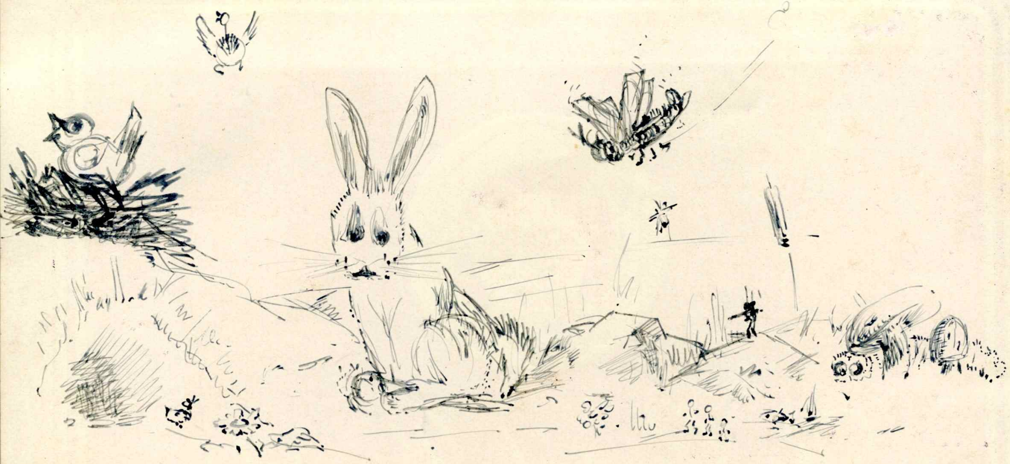
The General Principles OF MATERNITY NURSING

INCLUDING THE MANAGEMENT
AND ASEPTIC TECHNIQUE OF
LABOUR AND THE PUERPERIUM

ISSUED BY THE DEPT. OF HEALTH
NEW ZEALAND



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THE GENERAL PRINCIPLES OF MATERNITY NURSING

INCLUDING

The Management and Aseptic Technique of Labour and the Puerperium

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FOURTH EDITION

A standard to be adopted in the Practice and Training of Midwives and Maternity Nurses

WELLINGTON, N.Z.
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FOREWORD

THE pamphlets entitled "The General Principles of Maternity Nursing" and "The Management and Aseptic Technique of Labour and the Puerperium" were first issued in 1926 with the object of standardizing the method of nursing to be followed by midwives and maternity nurses practising maternity nursing and to be taught in the maternity-training schools of New Zealand. Their issue was followed in the succeeding years by a steady decline in the deaths from puerperal sepsis as shown in this table:—

—	1927.	1928.	1929.	1930.	1931.	1932.
Number of deaths	56	42	30	27	18	13
Rate per 1,000 live births ..	2·01	1·54	1·12	1·01	0·68	0·52

—	1933.	1934.	1935.	1936.	1937.	1938.
Number of deaths	15	17	8	9	14	21
Rate per 1,000 live births ..	0·58	0·70	0·33	0·36	0·54	0·77

In 1935 the pamphlet was reprinted when a few minor modifications in the technique rendered necessary by increasing knowledge, the result of investigations and experience, were introduced. For the same reasons changes have been made in this issue.

MASKS

The knowledge that some cases of puerperal sepsis were due to droplet infection from the nose and mouth of carriers (Colebrook) caused the introduction of masks.

Used under proper conditions they certainly are a safeguard; improperly used they may easily increase the danger of transferring infection from the attendant to the patient. It must be kept constantly in mind that a mask that has been worn is infected and that, due to saturation, it fails to perform the function of a barrier against the transfer of infection. Handling the mask by any other part than the tapes for adjustment will transfer the infection that the mask has intercepted to the hands, and thereby increase instead of decreasing the risk of infection being transferred to the patient. A mask cannot be relied upon to prevent infection being transferred from an attendant suffering from an acute infection of the tonsils, mouth, or nose. When the mask is removed it must be immediately discarded, placed in a disinfectant, or a special container prior to being sterilized by boiling, and the hands and forearms must be scrubbed.

ANTISEPTICS

Better knowledge of the action of antiseptics, principally due to researches of Garrod and Colebrook, has made it necessary to reject some of the older antiseptics as unsuitable for use in midwifery. It has been shown that lysol and biniodide of mercury are unreliable in any strengths that are not corrosive. As the result of experience Cyllin 1 dram. to 3 pints (1 in 480) as a washing lotion has been adopted, and owing to its efficiency and low cost per unit of lotion is advocated. It has certain disadvantages for hand-disinfection, and for that reason Dettol 30 per cent. cream is now generally preferred for that purpose, also for the moist swabbing of the vulvar region, where iodine is objected to. It is the best effective disinfectant for rubber gloves of any that have so far been tried, and can be used as a disinfectant while the gloves are on the hand. As a washing lotion Dettol is not effective in a strength of less than 1 in 50 (3 drachms to a pint), and at that strength it is costly. For this reason some nurses have been tempted to use it in ineffective strength, a dangerous practice. Other disinfectants may be equal to the above, and new ones are being constantly introduced. Attendants are advised not to use any except those that have been tested by a reliable bacteriologist and have been proved to have the necessary bacteriacidal properties in such strengths that they can be used without damaging the skin. A particular warning is necessary against the use of any antiseptic in a strength below that which is effective. Attendants are warned against accepting general statements regarding the suitability of any antiseptic unless such statements are supported by the report of an independent bacteriologist. The Health Department, through its officers, will supply any reliable information on disinfectants that may from time to time be available.

For notes on disinfectants and table of suitable disinfectants see pages 39–40.

Attendants should bear in mind that the foundation of asepsis is absolute sterilization of all articles that are liable to come in contact with the field of operation or with the hands of the attendant, &c. Not only must articles be sterilized, but they must be kept sterile by being properly protected after being removed from the sterilizer. To use as "sterilized" an article that has been inefficiently sterilized or has been contaminated after being sterilized, may cause the death of a patient. Inefficiency where health or life is at stake is inexcusable.

PSYCHOLOGICAL ASPECTS

Some remarks on what may be termed "the psychological aspect of nursing" have been introduced into this issue, and the attention of nurses is particularly drawn to them.

Those who are interested—all should be—should read "Natural Childbirth," by Grantly Dick Read, whose statements that fear is a big factor in delaying and complicating a labour that would otherwise be normal will be supported by all experienced obstetricians, whether doctors or nurses. Efficient ante-natal attention will do much to give a patient confidence and to remove fear, and thus lessen the necessity for the excessive use of analgesic and amnesic drugs. Nurses preparing the patient for and conducting the labour can do much to help in this direction.

The science and art of obstetrics is constantly advancing, and if nurses and midwives are to maintain their efficiency they must keep themselves abreast of the times. The Health Department and the Obstetrical Branch of the Registered Nurses' Association is doing its best to provide nurses with the means of doing this, and those practising the science and art of obstetrics are advised to take advantages of these facilities. What was "the best" years ago is only second best now. There is no room for the "second best" in the practice of medicine and nursing.

ALTERATIONS

Several new sections have been included in this issue—viz., care of the breasts, nursery technique, and diet during pregnancy, labour, and puerperium. It is expected that this material will be followed by all training-schools for midwives and maternity nurses, in all maternity hospitals, and in domiciliary practice by midwives and maternity nurses.

Scrubbing of Hands and Forearms.—The aseptic technique for hand-washing has been slightly modified. Scrubbing with a nail-brush under running water is still to be followed for labour and isolation procedures. For panning, the hands and forearms are to be well washed with soap under running water and then dried on a sterilized *individual* towel. For convenience, small hand towels should be sterilized in conjunction with lying-in outfit. Care should be taken to ensure that nails are kept short and that the hands are scrubbed *at least once* on every duty.

The General Principles of Maternity Nursing

INCLUDING

The Management and Aseptic Technique of Labour and the Puerperium

THE ASEPTIC TECHNIQUE OF LABOUR AND THE PUERPERIUM

The efficiency of a technique for the maintenance of aseptic conditions during labour and the puerperium is dependent upon—first, the efficient sterilization of all dressings and appliances that are to be used during the preparation for and the conduct and management of labour and the puerperium; secondly, the maintenance of a sterile condition of the articles during removal from the sterilizer and while being stored and used. In hospitals provided with a complete equipment of sterilizers, dressing drums, &c., and to those accustomed to the carrying-out of an efficient aseptic technique in surgical cases, little difficulty will be found in applying the principles of surgical asepsis to obstetrics.

To ensure the maintenance of asepsis without undue inconvenience and excessive work, two properly equipped rooms are required—the bath-preparation room for bathing and the preliminary preparation of the patient, and the labour-room or obstetric theatre, in which delivery is completed.

A third room, the first stage or waiting ward, is a necessity in the larger hospitals equipped with a separate labour block, in order that the Sister in charge of that block may maintain the necessary supervision over the patient prior to her admission to the labour room or theatre. It has the further advantage that it avoids prolonged occupation of the theatre, and may be used for delivery in cases of precipitate labour.

BATH-PREPARATION ROOM

This room must be equipped with a bath, with either shower or bath seat which will be required for bathing those patients who should not be given an immersion bath; basin with overhead wash with lever taps; couch or a substitute for it—viz., a light board to cover the bath on which, after it has been suitably padded with blankets, sheets, &c., the patient can be laid; a chair; a shelf on which is kept the necessary antiseptic, nail-brush, rubber gloves, &c.; a table or bench to carry the necessary equipment. A closet-pan into which the enema can be evacuated or the chamber, or bedpan, emptied, is an additional convenience.

FIRST-STAGE WARD

This room, which is necessary in the larger hospitals with a separate labour block, is not necessary in the smaller hospitals, in which the lying-in ward that the patient is to occupy may be used for the purpose. It should be furnished with a comfortable couch and a chair in which the patient can recline comfortably, and a basin with overhead wash with elbow action taps.

LABOUR WARD OR OBSTETRIC THEATRE

This room in its simplest form should be equipped with one or two scrub-up sinks with overhead wash with elbow action taps; shelves to carry sterile drums, &c.; a well-designed labour bed; two tables, each about 3 ft. by 18 in. for carrying the trays of equipment; two adjustable stools; an anæsthetist's table, and a cot to receive the infant. It should be lighted with suitable adjustable lights. The equipment is to be arranged as follows before the patient is taken to the theatre: The tables are placed in a convenient position on the right-hand side of the bed. One table will remain uncovered and will be referred to as the "non-sterile table." The second table will be covered with a sterilized cover and will be referred to as the "sterile table." Upon the unsterile table is placed—(1) the container of the sterilized labour outfit or the dressing drums containing the different articles required; (2) the two 14 in. basins or tray containing the sterilized bowls, gloves, nail-brushes, and wet sterilized dressings, &c.; (3) a jar of 2 per cent. Dettol lotion for the sterilized lifting forceps; (4) the bottles of Cyllin, Dettol, iodine, and the soap. Alternatively, two trays already laid out and protected with sterile cloths are placed upon these tables.

All the above rooms should have means of keeping them comfortably warm, should be well ventilated and lighted, and have their walls and floors finished with a smooth surface easily washed and impervious to water.

STERILIZING-ROOM

In addition to the above rooms for the use of the patient, there must be a sterilizing-room equipped with bench and shelves on which the sterilizers and sterilizing equipment can be kept. This room must also be equipped with a gas-ring or other means of heating the sterilizers.

The method described below assumes that a high-pressure steam-sterilizer working at 15 lb. pressure and a utensil-sterilizer of sufficient size to take bowls, chamber, bedpans, and trays are available, also an instrument and glove sterilizer. For domiciliary practice and for small hospitals not so elaborately equipped modifications are also described.

APPLIANCES AND DRESSING REQUIRED FOR THE NORMAL LABOUR

Sterilized appliances for labour—

- Two 2-gallon jugs.
- Two 14 in. bowls—for antiseptic lotion for hands, &c.; these may also be used as a utensil-sterilizer.
- Three 8 in. bowls—one for the gloves, one for swabbing-lotion, and one for discarded masks.
- Two 5 in. bowls—for swabbing catheters, &c.
- Four 3 in. bowls—one for eye-swabs, one for iodine, one for Dettol paste, and one for soiled swabs.
- Two 10 in. kidney trays.
- Rubber gloves and guarded finger-stalls.
- Two nail-brushes.
- One washing-cloth.
- One pair scissors.
- Two rubber catheters, No. 7 or No. 8.
- One mucus-extractor.
- Three pairs of dissecting forceps.
- Two pairs of artery forceps.
- One pair lifting forceps and jar for them.
- Hypodermic syringe.
- One bedpan.
- One douche-can complete with tube, clip, and rubber rectal tube.

STERILIZING UTENSILS AND APPLIANCES

In a hospital equipped with utensil, instrument, and water sterilizers the appliances above mentioned should be sterilized in the suitable sterilizers, lifted out with sterile forceps, and arranged upon a sterile tray or a tray covered with a sterile cloth and protected with a sterile cover-cloth.

The jugs are filled with sterile water (one hot and one cold) and covered with a sterile cloth tied to the handle. An alternative method is to sterilize the jug and fill it with water to which Cyllin has been added in the proportion of one drachm to 2 pints; in fifteen minutes the lotion is sterile and can be further diluted by the addition of boiling water to make the lotion 1 drachm to 3 pints.

In private houses and hospitals not having a complete set of sterilizers the following method should be adopted:—

The enamelled jugs are filled with boiling water and covered with cover-cloths tied to the handles; they are then placed on the stove and boiled for five minutes, by which means the inside of the jugs, the water, and the inside of the cover-cloths are all sterilized. They are then left to cool.

The bedpan, chamber, and douche-can are to be sterilized in a utensil sterilizer or placed in a suitable bag and boiled for five minutes in the laundry copper. They are then allowed to cool and dry in the bag and kept therein until required for use in the bath-preparation room to which they are to be taken.

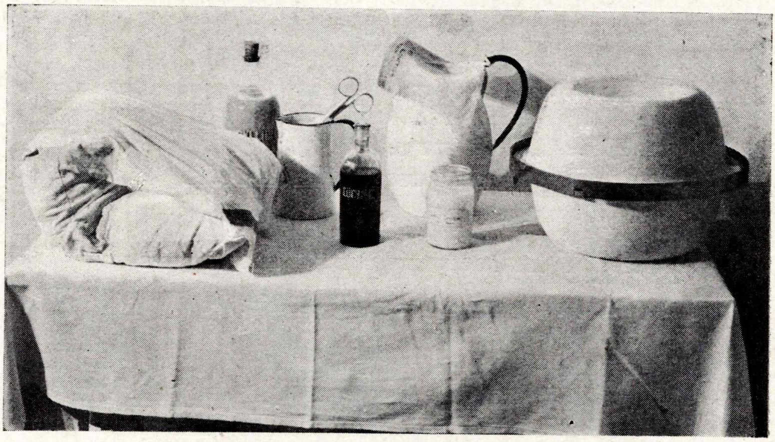

Fig. 1.

Showing one 2-gallon jug of cold sterilized water or Cyllin lotion; two 14 in. bowls with retaining-ring containing small bowls, kidney-trays, &c.; jug of antiseptic with lifting-forceps; sterilized labour outfit in double envelope bag.

If ordinary utensil sterilizers are not available the two 14 in. enamelled iron bowls are used as follows:—

One 14 in. enamelled iron bowl with about a quart of water is placed on the stove or gas-ring, and in this is placed a packet of swabs, one washing-cloth, the smaller bowls, kidney-trays, nail-brushes, dressing forceps, and catheters. The remaining 14 in. bowl then covers this and forms a lid to its fellow 14 in. bowl, which is used as a boiler. The lid bowl should be retained in place by a properly designed retaining ring (see Fig. 1). The two 14 in. bowls, with their contents, are then allowed to boil for five minutes. The scissors are to be sterilized in a tray of 33 per cent. Dettol lotion or other suitable antiseptic.

Failing two 14 in. enamelled iron bowls, the basins, douche-can and kidney-trays can be sterilized in the same way as the bedpan and chamber, and the nail-brushes, washing-cloth, catheters, and forceps can be boiled in a bowl or saucepan for five minutes. Lastly, the gloves and finger-stalls are put on to boil for five minutes in a saucepan or other suitable vessel.

DRESSINGS

(1) *The Labour Dressing Outfit*

This consists of two parts, one of which must be dry sterilized, the other may be dry sterilized or sterilized by boiling.

(*a*) *Dry Sterilized Labour Outfit,* to be packed in the following order from above downwards:—

One loose mask.

Two table or tray covers.

Two hand towels.

Six or more large wool and gauze swabs, each 4 in. by 4 in. by ½ in., and the whole enclosed in a calico wrapper.

Three vulvar pads, each 9 in. by 4 in. by ½ in., made of cellulose wadding, cotton-wool, or cotton-wool and tow, wrapped in gauze; each vulvar pad to be folded in a diaper in the following manner:—

Fold the diaper twice lengthwise, lay the pad upon it an equal distance from each end, fold the ends over so that each covers half the pad, then fold pad and diaper in the middle. By this method the pad and the diaper can be opened up for application without touching the inner side of the diaper or napkin (see Figs. 3 and 4, page 12).

One draw-sheet.

One large guard or draw-sheet.

One pair white cotton stockings or leg-guards.

Four napkins or cloths for perineal and thigh guards.

A second apron-skirt.

A second draw-sheet.

Two binders and twelve large safety-pins.

Nine umbilical dressings, three umbilical ligatures—the whole enclosed in a wrapper.

Six masks in a wrapper.

Nurse's overall in a separate wrapper.

The preceding outfit is to be loosely packed in a drum or drums to fit the sterilizer or in a suitable calico bag, and should be sterilized for thirty minutes at 15 lb. pressure in a high-pressure steam-sterilizer.

NOTE.—The dry sterilized outfits for labour and puerperium are designed to be complete for the requirements of a case that runs a normal course and for district work, and in small hospitals not having a sufficiency of dressing drums to supplement it it must be complete. In larger hospitals the outfits may be modified to suit the circumstances and such articles as extra swabs, guards, gowns, and draw-sheets may be packed in separate drums. The trainee, however, should be taught to pack and use the complete outfit, which outside the hospital can only be supplemented at short notice by articles sterilized by boiling.

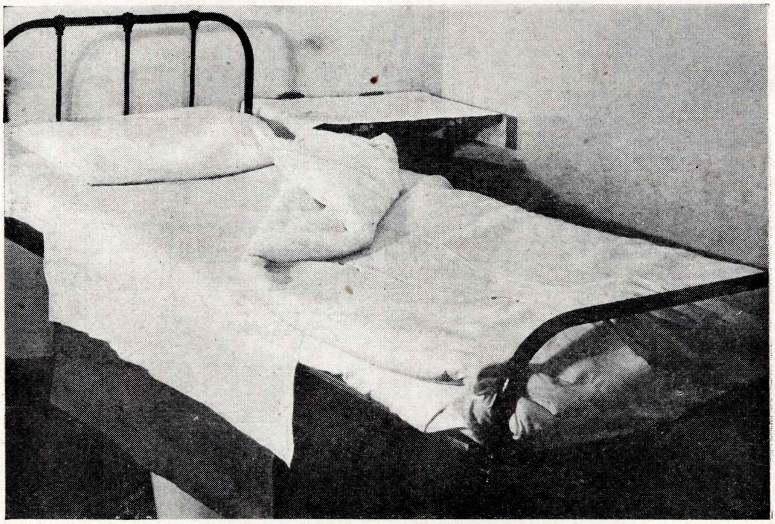

FIG. 2.—SHOWING THE LABOUR BED.

(*b*) *Wet or Dry Sterilized Outfits.*—Three dozen cotton-wool or tow swabs and four wash-cloths to be sterilized either by boiling for five minutes or by dry sterilizing. (If more perineal and thigh guards are required in emergency than are supplied in the dry outfit they can be supplemented by guards that have been sterilized by boiling for five minutes.)

(2) *The Lying-in Dressing Outfit*

(*a*) ***For the Nurse:*** Clean gowns and one dozen masks.

(*b*) *Dry Sterilized Outfits:*—
Six dozen vulvar pads.
One hundred wool or towel swabs.

(*c*) *Unsterilized Outfit:*—
Two binders.
Twelve napkins.

Antiseptics:—
Tincture of iodine, 2 oz.
One bottle of Cyllin or other antiseptic suitable for midwifery.
One bottle of Dettol or Dettol paste for hand and skin disinfection.
One cake of yellow soap which has been boiled in the making.
(Common yellow soap has greater antiseptic properties than the more refined toilet soaps.)
One bottle of nitrate of silver lotion for the baby's eyes.

PREPARATION OF THE LABOUR BED

This is made up as follows:—

(1) A board covering the springs ($\frac{1}{8}$ in. three-ply board is suitable).
(2) The mattress, with removable cover.
(3) A large waterproof sheet, covering the mattress and turned in beneath it.
(4) An under blanket.
(5) The under sheet.
(6) A waterproof sheet, 1 yard by 1½ yards.
(7) A draw-sheet.
(8) A pillow.
(9) A top sheet, and the necessary number of blankets.
(10) A cover sheet.

The draw-sheet and upper waterproof should hang down over the right-hand side of the bed as a valance. The top sheet is folded over the right-hand side and the top of the blankets and cover-sheet, and pinned in place. The left-hand side and bottom of the upper sheet and blankets are tucked under the mattress. These can be untucked and pinned up at the end of the second stage or during the time the nurse is working on the left-hand side of the bed. The covering so arranged should be wide enough to completely cover the patient and hang over both sides of the bed, thus keeping her warm, cosy, and comfortable and avoiding chill, which is both uncomfortable and detrimental to the patient.

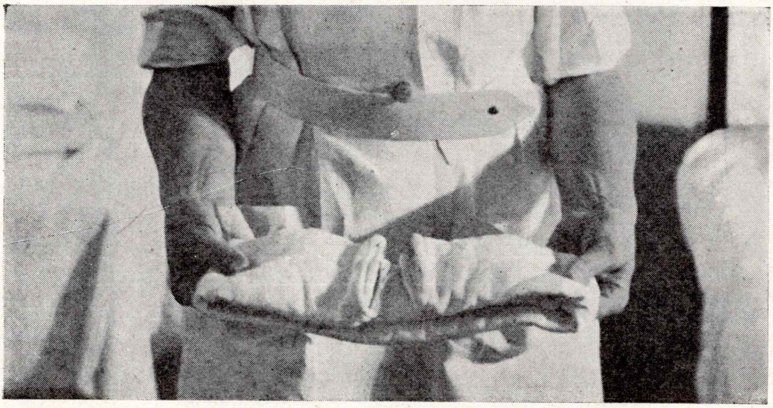

Fig. 3.

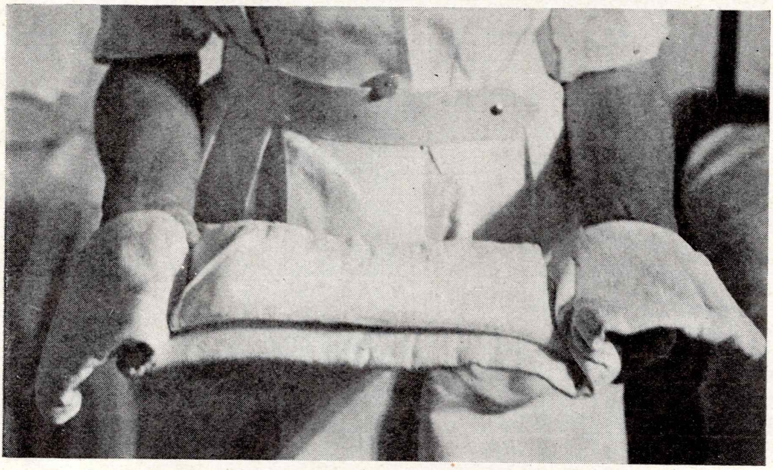

Fig. 4.

THE GENERAL PRINCIPLES OF MATERNITY NURSING

Admission of Patients for Delivery

When a patient presents herself for admission it is the duty of the nurse, by a sympathetic and kindly attitude, to set her as far as possible at her ease and to give her confidence. Most women approach the time of actual delivery with anxiety and a certain amount of fear. These emotions may have a very definite influence in producing muscular spasms and thus delaying the process of child-birth, and the nurse's demeanour can do much to prevent this effect. A nurse who neglects this duty is not a good maternity nurse, however well she is equipped with scientific knowledge.

Patients for admission may be normal patients near term or abnormal patients requiring special care and treatment before delivery. Unless there are abnormalities or labour is so far advanced that delivery is imminent, all patients are to be admitted to hospital according to routine. For instructions on the preparation and management of patients suffering from abnormal or septic conditions see page 19.

Routine to be followed in admitting Patients

1. Obtain the ante-natal chart and attach it to the labour chart. Note if there is any record of abnormality during the present pregnancy or in previous pregnancies or labours. If there is any such record or there is evidence, obtained by questioning the patient, of the presence of any septic condition or communicable disease, and if there has been any unauthorized vaginal examination made prior to admission, treat the case as possibly infected and report to your senior officer or doctor in charge of the case in order that special precautions may be taken to avoid infecting the vulva or its neighbourhood, or spreading the infection.

2. Fill up that portion of the hospital chart relating to admission.

3. Note the patient's general condition and any signs or symptoms that may indicate the imminence of delivery; any abnormal conditions such as bleeding, premature rupture of membranes, any septic or inflammatory conditions, particularly of the nails, skin, throat, or purulent vaginal discharge, also any general infectious disease that may be a source of uterine infection to the patient herself or to others. If such conditions exist or if there has been any vaginal examination made prior to admission, record them in order that special precautions may be taken.

4. Take the blood-pressure, pulse, temperature, and respiration, and chart them.

5. If there is no abnormality, proceed with the preparation of the patient according to the following routine:—

Preparation of the Patient

Before commencing to prepare a patient, the nurse (or nurses) puts on a clean, short-sleeved gown and a mask.

(1) If there is history of unruptured membranes and the patient is not bleeding or has no other obvious abnormality, take her to the bath-preparation room, undress her sufficiently to palpate the abdomen, and allow the patient to pass urine into a clean vessel. Measure the quantity, examine the specimen, and record the result on the chart. If albumin is present, a catheter specimen must be obtained and the result of the examination recorded.

(2) Place her in the dorsal position on the couch or bath-cover board, which has been suitably covered with folded blankets, mackintosh, draw-sheet, and pillow. Cover her suitably, palpate, ascultate, and note the results on the chart.

(3) To prepare the pubic area the following tray is necessary:—

Bowl with washing-cloth and household gloves.

Bowl of soft soap.

Bowl of ether soap.

Bowl of hot water.

Scissors, razor, glove-powder.

Cyllin for gloves.

The nurse puts on the rubber gloves for the protection of her hands and to save repeated applications of disinfectants to them. These may be of the ordinary household type which cannot be boiled. Before removal they are first washed in hot soapy water whilst on the hands, washed over with pure Cyllin, and then rinsed and dried.

(4) The external genitals are washed with the soap and water, using the washing-cloth. Shave the pubic hairs or clip them closely. Remove gloves by the method indicated above.

(5) Give a simple enema and get the bowels opened. A chamber or night-stool is to be used in preference to the closet, so as to be able to note the result of the enema (which is charted) and also because precipitate labour sometimes occurs, and in such cases injury to the baby might result. After this procedure the nurse washes her hands.

(6) Patient is placed on the bath-board and a rectal examination is made. For this examination a tray containing a jar of rectal stalls, a bowl of linen swabs, a bowl for soiled

swabs, paper finger-guards (if guarded finger-stalls are not used), a bowl for the soiled rectal stalls, and a quantity of vaseline. Before the finger-stall is removed, it must be wiped free of vaseline, &c.

(7) Patient is now completely undressed for bathing. Clothing is entered in the clothes-book, which the nurse and the patient sign.

(8) Wash the patient under a warm shower-bath or while sitting on a suitable bath-seat protected with a towel, with only the feet and lower part of the legs immersed unless a full bath is ordered. Wash the hair if necessary and if it is possible to dry it.

Dress the patient in a clean vest, nightdress, and dressing-gown, which are rolled up above the waist and pinned in position.

(9) The patient is now placed in the left lateral position on the preparation bed and the preparation continued. The following sterilized equipment is necessary:—

Bowl of Cyllin, 1-480.

Bowl containing sterile swabs, diaper, and vulvar pad.

Bowl for soiled swabs.

Bowl for iodine (if used).

Sterile hand towel.

2 pairs of dressing forceps.

Dettol cream.

If a vaginal examination is to be made, it should be carried out immediately following the sterile preparation given below. A bowl containing two right-hand gloves and sterile guards will be required in addition to the above.

(10) After seeing that the patient is suitably covered, the nurse scrubs her hands under running water, dries them on the sterile hand towel, and applies Dettol cream. With a sterile wash-cloth she washes round the vulva and buttocks with the Cyllin solution, keeping the anus covered by a sterile swab held in the forceps. Then with swabs soaked in Cyllin solution the vulva is washed by a stroke of the swab from before downwards, using three swabs in succession—middle and either side. The skin around the vulva and buttocks is dried and the area around the vulva and anal region painted with Dettol or iodine, according to the orders of the physician, for a distance of at least 10 in. A sterile vulva pad folded in a diaper or napkin (see Fig. 4, page 12) is now applied, and is secured to the abdominal binder, care being taken to see that the hands do not come in contact with

the inner surface of the pad. If a vaginal examination is to be made, after the application of the skin antiseptic the nurse places a sterile guard round the thighs and perineal region, rubs Dettol cream into her hands, puts a glove on her right hand, separates the labia with the thumb and forefinger of the left hand using a sterile swab, and inserts the first two fingers of the right hand into the vagina. On completion of the examination the glove is removed, the vulva is dried with a sterile swab, and the diaper and pad applied and attached to the abdominal binder.

(11) The nightdress and dressing-gown are adjusted, and if the patient is not yet to be put to bed, warm stockings and slippers are put on, and the patient is taken to the first-stage ward.

(12) The nurse returns to the preparation room, sterilizes the equipment used, remakes the bed, removes her gown, and washes her hands.

Labour Routine

The routine management of the patient during labour is to be carried out as follows:

First Stage.—If the patient is in the first stage of labour, she remains up unless there are special reasons to the contrary. She is to be encouraged to alternately walk about and rest in a comfortable chair.

From now on the patient is to pass urine every two hours, and the quantity is to be recorded.

During the first stage the fœtal heart should be counted every two or three hours and charted. Light nourishment is to be given every one to two hours and the quantity recorded. The portion relating to "Patients in Labour" in the Dietary Section should be followed.

Preparation of Sterilized Outfit.—During this stage the equipment for carrying out the complete aseptic technique is prepared and set out in the labour-ward according to the following instructions:—

The nurse puts on a clean gown before entering the labour-ward. She then opens the outfit of dressings, takes out the mask from the top, and puts it on. (In a large hospital it is quite possible that a supply of sterile masks will be available outside the Labour-ward door, in which case the mask will in all probability be put on before the nurse enters the labour ward.) She then proceeds as follows:—

Spread the sterile table-cover on the second table, using cheatle forceps, taking care that the uppermost side does not come in contact with anything that is not sterile. She now removes the 14 in. cover bowl and places it upright on the first (non-sterile) table and with the forceps arranges the sterile bowls upon the second (sterile) table. In each of the 14 in. bowls, the insides of which are sterile but the outsides non-sterile, she pours a quart of antiseptic solution such as Cyllin (1–480), and into one of the 8 in. bowls on the sterile table a pint of the same lotion, and with the lifting forceps places the envelope containing the sterilized gloves in the other 8 in. basin on the sterile table and pours some iodine (if used) or Dettol into one of the 3 in. bowls. With the lifting forceps place the packets of dry swabs and masks on the sterile table. The layout is now complete.

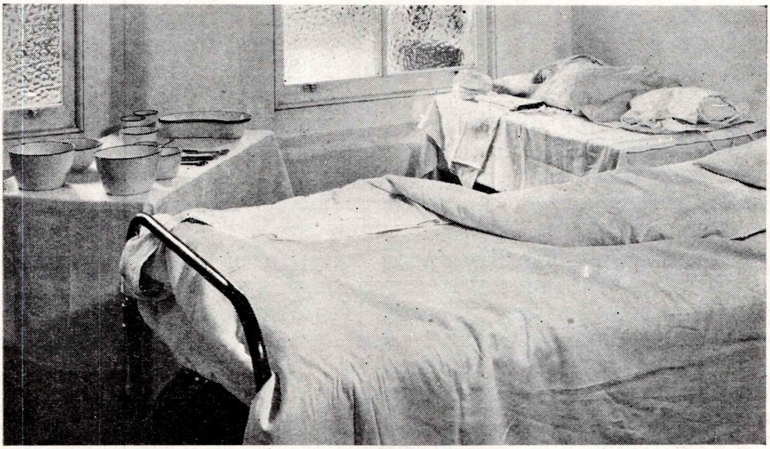

FIG. 5.—LABOUR BED WITH TABLES SET OUT ALONGSIDE.

Second Stage.—When the second stage is reached, or the patient is to be prepared for bed, she is taken to the labour-room, her stockings and slippers are removed, and her night-gown is rolled up above the waist-line and covered with the singlet and secured with safety-pins. The patient is placed on the labour-bed in the left lateral position and is completely covered so as to avoid chilling. (Where the patient is to be delivered in the lithotomy position, the technique which follows will have to be slightly modified to suit the position in which delivery takes place.)

When actual delivery is pending, the nurse proceeds as follows:—

The hands and forearms are scrubbed, dried on a sterile towel, and the nurse puts on her sterile gown. Using forceps, the vaginal toilet is carried out. With swabs wrung out in the Cyllin solution by means of two pairs of forceps, the vulva, thighs, anal, and gluteal regions are swabbed from before backwards, dried, and Dettol cream or iodine applied to a distance of 10 in. The vulva is covered with a sterile vulva pad. The patient is turned so that her right shoulder reaches the left-hand side of the bed. The sterile draw-sheet is now placed on the bed and the patient returned to the left lateral position with the buttocks well over to the right-hand edge of the bed. The sterile leg-guards are now put on. (If the patient is delivered in the lithotomy position, the leg-guards should be made in the form of two large pillow-slips joined together so that they will completely cover the legs and thighs.) The sterile draw-sheet is placed in position to expose as small an area as possible (this replaces the apron skirt formerly used). The nurse applies Dettol cream to her hands and dons her gloves. With the left hand between the legs she controls the advancing head, at the same time protecting the anus with a sterile anal pad, which must be discarded and a fresh one applied should it become soiled. As the head is about to be delivered, a large sterile guard is placed over the left leg, completely covering the lower area of patient and bed. On no account must the right leg be allowed to rest on this sterile area. Delivery follows.

Anæsthesia.—The registered midwife or maternity nurse is permitted to administer amnesics, analgesics, anæsthetics to the obstetrical degree, provided the doctor in charge of the case either during labour or ante-natally has given explicit permission for this to be done and instructions as to dosage and methods. Before an anæsthetic is administered, remove any artificial dentures.

Third Stage.—After the completion of the second stage the patient is placed in the dorsal position and a large guard or draw-sheet is placed over the legs and tucked in to allow a kidney tray to be placed in such a position that any clots may be discharged into it. The vulva is covered with a sterile vulvar pad. A fresh sterile guard is placed over the abdomen and the rising of the fundus noted. The placenta is not to be expressed until separated except by the explicit directions of the medical man or midwife in charge.

After the completion of the third stage the labia and perineum should be examined for lacerations. The toilet is then completed as follows: using four swabs saturated with Cyllin solution, swab middle, left, and right, and with the fourth swab held over the vaginal orifice pour the lotion over the vulvar area. Holding swab is discarded and parts dried, using same order as above for wet swabbing. A sterile vulvar pad is now applied and the patient is turned to the left lateral position. Complete the anal toilet and cleanse area of thighs and buttocks. Dry. Remove folded diaper from bundle and, taking care not to touch the inside (see Figs. 3 and 4, page 12), apply this to vulva whilst patient is still in left lateral position. Nurse now removes her gloves. She rolls the soiled draw-sheet and mackintosh under the patient, places the binder in position, and pins the back end of diaper securely to it. The patient is now turned on her back, the binder adjusted, and the diaper pinned securely in front. The patient is covered, hot-water bottles freshly filled, and the patient made comfortable and left to rest for an hour. Careful watch is kept for any bleeding. Her temperature, pulse, and respirations are taken and recorded and the patient is given a cup of tea. Before transferring to the lying-in ward the patient is panned, the procedure given for panning being followed. After transferring patient to lying-in ward the nurse removes her mask and gown and washes her hands.

In two to four hours' time when the patient wakes, get her to pass urine. For this purpose undo the binder and remove the pad and place her on the bedpan. After the flow is finished, note by palpation the position of the uterus. If it seems too large, massage it and express any clots it contains. Pan the patient in the usual manner. The baby should now be put to the breast for a few minutes.

The effectiveness of the aseptic technique depends on entirely excluding from the sterile area all unsterilized articles, including unsterilized hands, and preventing droplet infection of this area by the wearing of a mask. It must, however, be borne in mind that if any examination or manipulation during delivery of the child or the after-birth is undertaken, the draw-sheets which might come in contact with the sterile glove and gown of the nurse must be regarded as non-sterile, and are to be covered with a fresh sterile guard.

PREPARATION AND MANAGEMENT OF PATIENTS SUFFERING FROM ABNORMAL CONDITIONS OR SEPTIC CONDITIONS

Abnormal Conditions.—If labour is far advanced, if the membranes have ruptured prematurely, or if there is bleeding, the bathing and preparation of the patient must be carried on with the patient lying down, a full bath must not be given, and she must be moved from room to room as little as possible.

Septic Conditions.—If from inquiry or observation during the preparation of a patient any septic condition, such as varicose ulcers, septic conditions of the nails, boils, or acutely inflamed areas of the skin, discharge from the ears, &c., are discovered, special precautions are necessary. As soon as such conditions are discovered they must be reported to the medical attendant or the senior officer in a hospital. The nurse should then protect her hands by putting on gloves, sterilizing the outside of them by rubbing with Dettol cream, and carefully and completely covering the septic area with an antiseptic dressing. The area round the dressing and the bandage should have Dettol or Dettol cream freely applied to it. As soon as this has been done all possibly infected articles such as towels, draw-sheets, &c., must be immersed for four hours in a strong disinfectant lotion such as Cyllin, 2 oz. to a gallon. The nurse must then wash her gloves with soap and water whilst they are still on the hands, rinse them under running water, and put them immediately into the sterilizer, where they are boiled for five minutes. Having thus eliminated as far as possible the chances of infecting the patient or her own hands from the septic areas, the nurse must put on a fresh overall and sterilized gloves, and these should be worn throughout the preparation, and the gloves rubbed with Cyllin (pure) or Dettol cream to disinfect them as often as may be necessary. Patients suffering from such conditions should, if possible, be confined in the emergency ward or in their own room, which thereafter must be treated as an infected area, and precautions taken in accordance with the instructions laid down in pamphlet H.-Mt. 18.

THE MANAGEMENT AND ASEPTIC TECHNIQUE OF THE PUERPERIUM

Management

(1) The urine must be passed every four to six hours.

(2) *Bowels.*—An aperient, such as castor oil or liquid extract of cascara, is to be given about thirty-six hours after the confinement, and from this time onward the bowels must move well every day. The position of the patient during evacuation of the bowels and the method of maintaining asepsis are described below. No severe purge should be given; if necessary, give an enema.

(3) *Diet.*—Light, easily digested food (see dietary section).

(4) The panning of the patient should be done at regular intervals—approximately every four hours until the tenth day, or longer if necessary, and at other times if the urine or fæces are passed; thereafter twice daily, or as required.

Thermometer Technique

(5) Take thermometer from solution and wipe free of lotion with a wet or dry swab. Read, and shake down if necessary.

Insert thermometer in mouth (or under arm) and leave for three minutes.

Remove thermometer, wipe with a wet swab to remove mucous. Read. Shake down, and replace in disinfectant (carbolic, 1–20, or Cyllin, 1–160).

(6) The temperature, pulse, and respirations are to be taken between 7 a.m. and 8 a.m., and between 5 p.m. and 6 p.m., and at other times if a rise in temperature is suspected. The highest temperature in any twenty-four hours must be carefully and faithfully recorded. **It is strictly forbidden to sponge the patient, or to adopt any other procedure with the object of causing a fall in her temperature BEFORE TAKING THE TEMPERATURE.**

For two reasons it is of the utmost importance that early rises of temperature and increase in the pulse rate should be observed and recorded at the earliest possible moment. The first is that precautions can be taken to prevent the spread of any infection that may be present, the second that measures for the treatment of the condition may be begun at once. **Early recognition and treatment may make the difference between a brief illness and a highly dangerous or fatal illness.** If a rise of temperature above 99° F. occurs, a four-hourly chart must be kept until a normal temperature has been maintained for thirty-six hours.

(7) The usual morning routine to be followed in nursing the patient during the puerperium is as follows:—

(*a*) Give an aperient, if necessary, and a cup of tea and/or light nourishment.

(*b*) Take the patient's temperature.

(*c*) Feed the baby.

(*d*) Pan the patient.

(*e*) Wash and sponge her, and make her comfortable.

(*f*) Give her breakfast.

(*g*) Tidy the room.

(*h*) Bath the baby before its second feed.

(8) In normal cases free movement in bed and early sitting and getting up are to be encouraged.

(9) *Bathing.*—The patient is to have a sponge bath in bed every day, and she is to be encouraged to sponge herself as soon as she is fit to do so. This gives her exercise and helps to tone up her muscles. She may have a bath towards the end of her fortnight's stay, provided she feels fit and that the bath is thoroughly cleansed before and after use. She ought to be advised to take a bath daily after her return home.

Aseptic Technique

There are three essentials in the aseptic management of the puerperium, and they are—

(1) To prevent the entrance of bacteria into the vagina:
(2) To keep the vulva and the perineum as dry as possible:
(3) To promote drainage from the uterus and the vagina.

The entrance of bacteria is prevented, first, by avoiding any form of vaginal interference, such as douching, examinations, or the passage of swabs into the vagina when cleansing the vulva; secondly, by maintaining as far as possible the vulva and perineum in a condition of surgical cleanliness; and, thirdly, by an efficient aseptic technique.

The vulva and perineum are kept dry, first, by using dry sterilized dressings; secondly, by removing as frequently as is necessary all dressings which have been wet by lochial discharge; and, thirdly, by preventing the contamination of the vulvar skin by fæces.

For a varying time after labour is over the lochial discharge may be heavy, and in some cases will soak through the outer dressings. When this occurs the pad must be changed and a new one put on, and this may have to be done every two or four hours. Later, as the discharge lessens, the pad need only be changed each time urine is passed or the bowels moved, providing cleanliness is maintained. Asepsis must be maintained at each change and the soiled pad and swabs either burnt or placed in a receptacle for removal at the end of each panning period.

The drainage of the uterus and the vagina is promoted, first, by allowing the patient to sit up and move about freely in bed as soon after labour as her condition justifies, and it is usually possible to do so the day after delivery unless the perineum has been torn; secondly, by making her sit on a chamber when passing urine and when the bowels act, instead of lying on a bedpan; and, thirdly, by getting her out of bed as soon after labour as her condition allows, and this can usually be done about the second or third day.

A patient who has had a normal labour should use a chamber instead of a bedpan right through the puerperium, either in the sitting or in the kneeling position. When a patient is sitting up during the emptying of either the bladder or rectum, and is at the same time making slight straining efforts, she causes a distinct pressure on the uterus, and this tends both to squeeze its walls together and to press it down into the vagina. In this manner the lochia is pressed out of the uterus into the vagina and out of the vagina into the chamber. If the patient is sitting up during this process, the escape of the lochia is faster and more thorough, because it is running downhill, instead of tending to collect in the upper part of the vagina. When a patient lies down the upper part of the vagina is the lowest part of the genital tract, and all discharge tends to collect there; if she does not sit up or turn over at regular intervals this discharge never gets completely away, and tends to undergo decomposition. Consequently, the regular sitting-up of the patient during the whole course of the puerperium is one of the most important points in the prevention of sapræmia.

For the same reason, as soon as the patient gets over the exhaustion of labour the nurse ought to encourage her to sit up in bed as long as she can do so without fatigue.

The date at which a patient leaves her bed is usually a matter for the medical attendant to decide. The earlier she is well enough to do so the better for her, as such movements promote drainage, and help the action of her digestive system, so that her appetite increases and her bowels work more regularly. Many women are better for being let up for a short time from the second day on; but if a patient is weak, or has had a difficult labour, or in any way departs from the ordinary standard of the lying-in woman, she must be kept in bed for a considerably longer period.

Recognition of and attention to the foregoing points are the foundations of the aseptic technique of the puerperium.

Carrying out the Technique

The appliances required when changing the vulvar pads and cleansing the vulva region and the perineum are as follows:—

Sterilized Appliances (required for each Panning):—

One mask.

Two 12 in. or 14 in. bowls if required as sterilizers or for washing the hands in; if not, a smaller bowl for forceps and nail-brush.

Three 5 in. bowls (one for swabs and pad, one for lotion, and one for soiled swabs).

Two pairs of forceps.

(These can be sterilized in a basin sterilizer or between the two large bowls as described for sterilizing the labour outfit basins.)

One jug of Cyllin lotion.

One bedpan.

One chamber.

(The bedpan and chamber may be sterilized each time after use or may be sterilized by boiling in a bag before being put into use and subsequently kept in the bag for the exclusive use of the same patient.)

Sterilized Dressings:—

One vulvar pad and required number of swabs from the dry sterilized outfit.

Unsterilized Dressings:—

One diaper, about 27 in. square, folded in one direction so as to make four thicknesses.

One binder.

One draw-sheet.

Antiseptics:—

A jar of Dettol cream.

The Technique of Changing and Panning

The bowls and forceps having been sterilized, the nurse puts on a mask. The utensils are then placed on a sterile tray. Into one of the 5 in. bowls a vulvar pad and the swabs are placed; in the other, $\frac{1}{4}$ pint to $\frac{1}{2}$ pint of Cyllin lotion (1–480). If running water is not available for washing the hands, a large bowl of water must be used. The chamber and bedpan are taken from the locker or brought in separately. A sterile hand towel should be placed on the tray.

The patient is prepared as follows:—

The binder is removed and, if not soiled, rolled and placed on the end of the bed. The soiled vulvar pad and the napkin are then removed, wrapped in paper or placed in a suitable receptable, and the patient sits on the chamber and empties the bladder, and the bowels if necessary. The patient is placed on the bedpan, and the chamber is removed, emptied, and placed in the sterilizer. The sterile tray for the vaginal toilet is now prepared and brought to the bedside. The pillows are removed, and the patient is now lying with her shoulders on the same level as her hips. The bed-clothes are folded downwards, and a folded blanket is placed across the chest and abdomen so as to cover the otherwise uncovered portion of the patient. The nurse now washes her hands and forearms in one of the large bowls or under running water and dries her hands on the sterile hand towel. The patient now raises the upper blanket, and the nurse with her elbow pushes the folded bedclothes downwards. The vulva is swabbed from before backwards using three swabs in succession, which are wrung out of the Cyllin lotion by the use of two pairs of forceps. With a swab held over the vaginal orifice, the Cyllin lotion is poured over the vulvar region. The vulva and surrounding area are well dried with the sterilized swabs. The bedpan is removed with the left hand and placed on the locker (not on the floor). The patient is turned to the left lateral position and the anal area is washed if necessary and dried with the remaining sterile swabs. The sterilized vulvar pad is placed in position and the diaper (if not sterilized and folded as in Figs. 3 and 4, page 12) is placed over the vulvar pad, the binder is placed in position, and the diaper pinned to it. The patient is turned on to her back, the diaper brought forward over the pubes and pinned to the binder in front. The binder must reach a full hand's breadth below the trochanters. The bed is tidied and the patient left comfortable. The soiled utensils are removed, emptied, and sterilized by boiling for five minutes. The nurse removes her mask, handling it by the tapes, places it in a bag or tin in which it is to be boiled, and washes her hands. After drying, the masks are put in a special container ready for use again.

NOTE.—On no account must the wet swabs used in cleaning the vulva be *touched by the hands*. Forceps must *always* be used.

CARE OF THE INFANT AT BIRTH

The following is a brief outline of the method of caring for the infant after birth:—

(*a*) As soon as the head of the infant is born, swab each eyelid and surrounding area with a damp sterile swab. Dry.

(*b*) After birth, cover the infant with a sterile receiving-cloth and keep it covered on the labour bed; avoid exposure to cold.

(*c*) The sterile tray is placed in a convenient position and the baby's eyes are treated. Where the delivery takes place in the lithotomy position, the nurse doing the delivery may have to carry out this technique, but where the baby is delivered in the left lateral position, the second assisting nurse will treat the baby's eyes and cut the cord, as follows:—

(*d*) The nurse, having scrubbed her hands and forearms and inclined the baby's head to the side of the eye to be treated, with the thumb and forefinger of left hand, and with a swab moistened with saline, swabs the eyelids gently from the nose outwards, and the swab is discarded. A second swab is used in the same manner, but is held at the outer aspect of the eye. The eyelids are then separated with the index finger of each hand and silver nitrate (one drop) instilled by an unsterile nurse. The eyelids are held open and irrigated with a swab saturated in saline solution. Dry. The other eye is treated in exactly the same manner. It must be clearly understood that the irrigation of the eye is essential following the instilling of silver nitrate.

(*e*) When pulsation of the cord has ceased, strip the cord and clamp it with artery forceps approximately 2 in. from the umbilicus-ligature cord immediately behind the forceps.

Apply a second ligature just below the vulva. The first ligature must be tightened slowly but thoroughly and tied with a surgeon's (reef) knot. Divide the cord with a pair of sterile scissors 1 in. beyond the forceps and compress cord end with a dry sterile swab to remove moisture. If the cord is thick, apply a second cord tie immediately beyond the first in the groove left by the forceps. Apply a sterile dressing.

(*f*) Wrap the baby in a sterile receiver, place in a warm blanket in a previously heated cot. The hot-water bottle used to warm the cot must be placed below the mattress.

The baby should be permitted to rest for about one to two hours while the mother's toilet is being attended to, but from time to time the cord should be inspected (without exposing the baby) and a fresh ligature applied if bleeding occurs. The baby should then be oiled, bathed, and dressed, unless the condition of the baby necessitates further delay. If the baby has not been measured and weighed, it should be done immediately after bathing and before it is dressed. The points to be observed in the bathing of the baby are to avoid chill or shock.

Oiling and bathing Baby.—A full immersion bath is not usually given until the cord has separated. Wrap the infant, which is still immersed in a sterilized receiving-cloth, in a thick warm towel. Wash the face, rub warm oil into the head and creases of the neck, and wash head and neck with warm water and a good soap devoid of free alkali, taking care not to contaminate the eyes. With a warm, fine towel dry the washed parts thoroughly, paying special attention to the folds of the neck and ears. Now uncover the arms and upper portion of the body and rub warm oil over the skin down to the feet. Sponge gently and rapidly with warm water and soap, making no effort to remove all the vernix caseosa. Dry with a patting motion. The aseptic treatment of the cord is now carried out. Dry thoroughly with iodine in spirit. Place umbilical dressing in position. Powder stump well with zinc and starch powder which has been previously sterilized in an autoclav. Wrap cord stump in dressing and apply binder. Dress the baby in previously warmed clothes. If the condition of the baby and mother permits, baby should now be put to the breast for a few minutes. The nurse washes her hands. *When sponging a baby a mask must always be worn.*

NOTE.—When applying iodine to the cord, care must be taken to ensure that it does not come in contact with the baby's skin. If the umbilical dressing is placed in position before the cord is treated, this can be avoided.

In addition to the outfit of clothes the following articles are required:—

(1) Sterile eye swabs.
(2) Sterile umbilical dressings.
(3) Sterile ligatures of strong soft knitting cotton.
 (Linen thread is liable to cut into the cord, and is unsuitable and dangerous to use.)
(4) Two sterile receiving-cloths.
(5) Square of soft cotton cloth for buttocks.
(6) Warm olive-oil or white vaseline.
(7) A good toilet soap devoid of free alkali.
(8) Methylated spirits, 2-per-cent. iodine, also Argyrol, Protargol, or 1 per-cent. silver nitrate solution in a blue bottle.

Clothing.—Soft cotton binders, sterile umbilical dressings, cotton cellular vests, silk and wool or fine woollen singlets, squares of linen for the buttocks which has been smeared with warm olive-oil or white vaseline, napkins, safety-pins, flannel or winceyette petticoats, flannel or winceyette gowns, Matinee jacket; bib and gloves of boiling material may be added with advantage.

Cot and Bedding.—Cot (wicker or wire), lined with sheeting and an enveloping blanket. Mattress or pillow filled with chaff; small mackintosh sheet; under blanket; cot sheets; two small blankets; coverlet or quilt; rubber hot-water bottle (covered and tested carefully for leaks).

NOTE.—The bottle must be placed under the mattress to avoid any chance of it coming in contact with the infant.

Bath Requisites.—Pure soap devoid of free alkali; two washing-cloths; two towels; olive-oil; white vaseline.

General Requisites.—Tape-measure and scales for weighing.

CARE OF THE BREASTS

The ability of a mother to give her infant its natural food may depend upon the care given to the breasts. When the breasts begin to secrete milk there is often a certain amount of discomfort, or even pain, from the increased weight, due partly to the secretion of milk and partly to congestion. If the breast is massive and pendulous, it should be immediately supported (see Fig. 7, page 29) to reduce the discomfort and congestion, from which inflammation and abscess may arise.

In such cases self-massage in conjunction with slinging is often of very considerable use and may with advantage be practised after each feeding except at night. on no [illegible]

The following is the method:—

The mother lies comfortably on her back with her head supported. The arms are bent comfortably at the elbows, then by making a continuous smooth movement the arms are pressed firmly against the side of the chest and across the breast until the elbows are facing one another. The arms are then lifted well upwards and outwards and describe a full circle, until the elbows are again brought to the sides of the chest. This circular movement, which massages the breast with the inside of the upper arm, should be performed four to six times steadily and rhythmically.

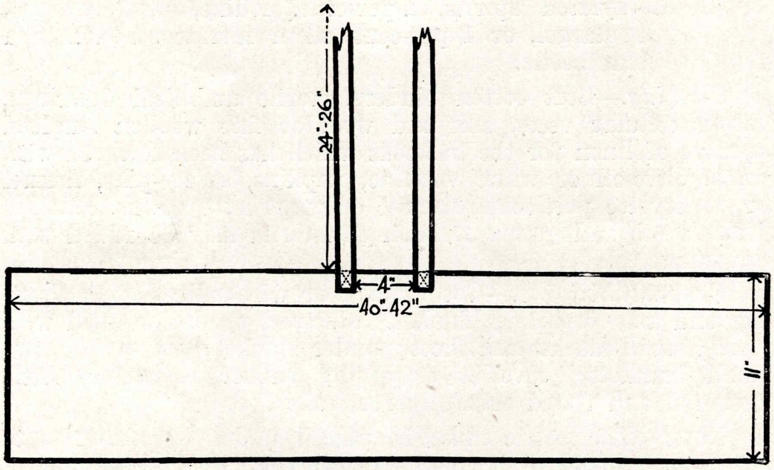

FIG. 6.—BREAST BINDER.

If, in spite of the slinging and the self-massage, the engorgement continues or increases, oil packs should be used. The method is as follows:—

Cut some circular pieces of blanket or flannel of sufficient size to cover the breast. Cut a hole in the centre of each piece through which the nipple will project. Soak each piece in cotton-seed or other suitable oil, place between two enamel plates, and heat in the oven. Test the heat by applying to the inner surface of the forearm. When the heat is right (it should not be uncomfortably hot), apply the oil pack to the breast and cover with a layer of cotton-wool. Sling the breast and apply very loosely a binder to keep the cotton-wool and pack in position. The binder should only be just tight enough to hold the pack and the cotton-wool in position. It must on no account press the breast against the chest.

If the packs are applied correctly, this will greatly decrease the discomfort and generally within twenty-four to forty-eight hours the condition will be corrected.

If at the end of that time the discomfort continues, very gentle hand massage may be used. The test as to whether it is being beneficial or otherwise is that it should be comforting and should decrease the pain and discomfort. If it does not do this, it is doing harm.

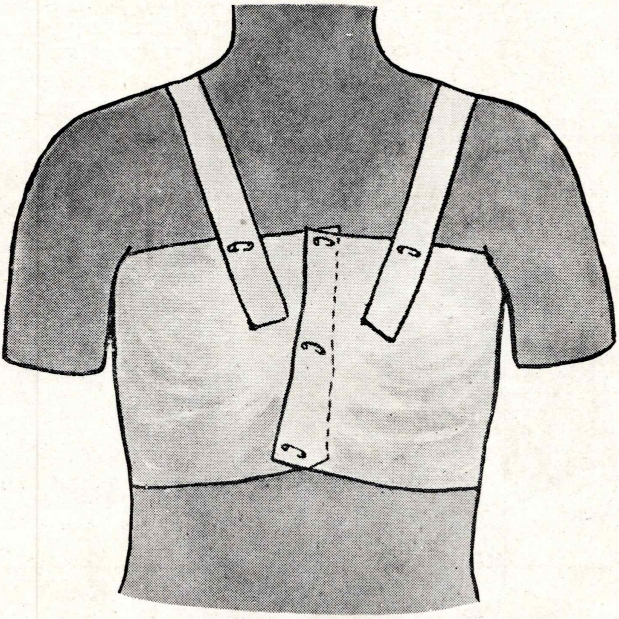

Fig. 7.—Diagram to show Application of Breast Binder to Normal Breasts. Lower Ends of Binder crossed and pinned firmly to act as Uplift.

Massage as follows:—

With the mother lying on the back and the head comfortably supported, mould both hands around the contours of the breast, but do not hold the hands rigidly. Gentle compression and relaxation is then applied with the hands, the object being to clear the ducts of accumulated milk. Begin by massaging that part of the breast close to the nipples, and gradually increase the size of the area being massaged so that as the stasis near the nipple is relieved the full breast is included. Pressure should be regulated carefully so that it is lightest at the outer area of breast and firmer near the areolar. Very gentle handling must be insisted upon, as pain causes increased spasm and constriction and the milk then flows even less readily and the vicious circle is aggravated further. The mother should be encouraged to carry this out herself under supervision.

The same method of massaging the breasts should be carried out when, for any reason, the baby cannot suck with sufficient strength—*e.g.*, premature or weakly infant.

As a rule, massage should not be continued beyond the time considered necessary to unblock the ducts, and the baby should be immediately put to the nipple and taught to suck. If reliance is placed on expression only, two evils result: first, the baby is not taught to suck, and secondly, the secretion of milk by the breasts soon diminishes and in most cases finally ceases.

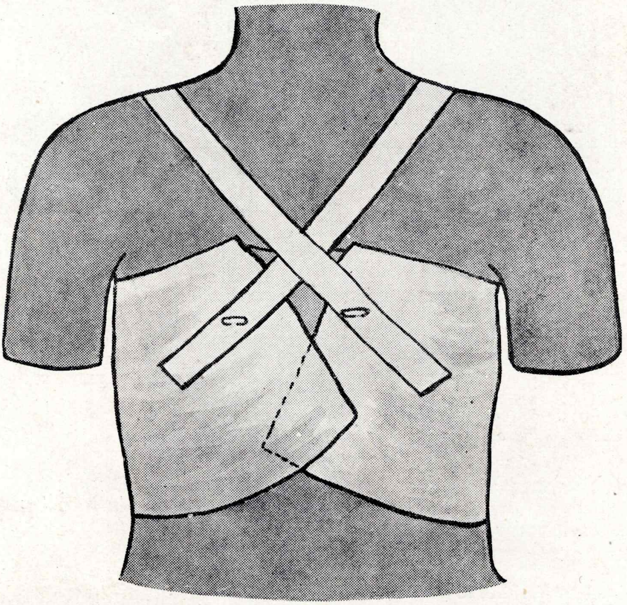

FIG. 8.—DIAGRAM TO SHOW APPLICATION OF BREAST BINDER WHEN BREASTS ARE ENGORGED AND FILLING AND REQUIRE FIRM SUPPORT. LOWER ENDS OF BINDER CROSSED AND PINNED FIRMLY, TO LIFT BREASTS, AND STRAPS ADOPTED TO PROVIDE SUPPORT.

It must be remembered that if the breasts are properly supported from the time that lactation commences engorgement will not occur. The pictures given in Figs. 6, 7, 8, and 9 show the ideal type of binder which, if applied according to instructions, will prove very successful as a preventive measure.

CARE AND TREATMENT OF THE NIPPLES

The supply of milk from the breast to the infant depends largely upon the condition of the nipples. The care of the nipple should have been begun during the latter months of pregnancy (for instructions see "Suggestions to Expectant Mothers," H.–Mt. 80, page 8).

If the treatment of the nipples during the period of pregnancy has failed to overcome retraction, the nipples must be very gently drawn out by the patient's finger and thumb and gently massaged to mould it into the necessary shape and permanence. Before putting the infant to the breast a little milk should be squeezed out of the nipple to encourage the infant to begin sucking. The infant must be held to the breast in such a position that it can continue breathing through its nostrils while sucking.

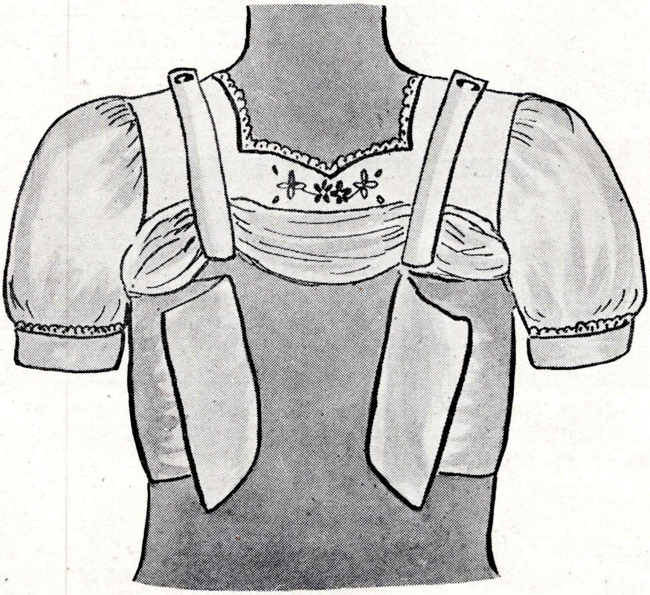

FIG. 9.—DIAGRAM TO SHOW METHOD OF PINNING STRAPS OF BREAST BINDER TO HOLD NIGHTDRESS OUT OF WAY WHILST BREAST-FEEDING, LEAVING BOTH HANDS FREE.

To keep the nipples in order they must be cleaned with warm water and a soft sterilized cotton cloth or one that has been boiled since it was last used. This should be done as a routine before and after the infant is fed, and the *nipples carefully dried.* During this process they should be examined for any tender spots or fissures. If there are any, treatment to cure them must be commenced immediately. Either consult your patient's doctor or, if he is not available, apply lead nipple-shields, often described as Wansboro's nipple-shields. These appliances, if kept constantly on the nipples except during feeding-time, rarely fail to effect a cure, and their use should be continued until the fissures are healed and sucking does not cause pain or until the doctor orders some other treatment.

Cracked nipples are a common source of the abandonment of breast feeding and are frequently the cause of breast abscesses. If the above instructions are faithfully carried out there should be no difficulty in the majority of cases in establishing breast-feeding.

It is a grave reflection upon the efficiency of the nurse and/or the mother if more than a very small percentage of infants leave the hospital not being breast-fed. In hospitals where breast-feeding is given special attention, the percentage of infants not breast-fed from the start and not breast-fed when discharged is rarely more than 10 per cent.

INFANT-NURSERY TECHNIQUE

Owing to the susceptibility of infants to infection, it is essential, in order to guard against its introduction or spread, that a nursery technique be carried out. This instruction is essential for adoption as the standard of training in the care of all infants in all training-schools for midwives and maternity nurses, in all maternity hospitals, and in domiciliary practice by midwives and maternity nurses. This instruction is to be used in addition to that given on pages 25–27 of this pamphlet regarding the care of the baby at birth and the equipment needed for him.

HAND-WASHING

Before and after changing, bathing, or attending to a baby the nurse must wash her hands, preferably under running water; if it is necessary to use a nail-brush, this must be sterilized by boiling each time before use. Immersion of brushes in an antiseptic solution does not sterilize, and is not a substitute for boiling or sterilization in an autoclave.

WEIGHING AND BATHING BABY

Prepare bath at a temperature of 100° F. Have ready clean clothes, napkins, head- and body-washing cloths, towel (a fresh towel is to be used for every bathing), and soap. Because of the possibility of cross-infection taking place, a *separate piece of soap should be kept* for the *use of each individual baby.* Undress the baby on the clean towel, discarding soiled clothes into receptacle provided. Sponge the baby, using the head-washing cloth for the face and head only. Dry. Discard towel and washing-cloths. Wrap baby in a clean napkin and place him on the scales, care being taken to see that his body is protected from contact with the pan of the scales. After weighing, dress the baby. The napkin that has been used to wrap him in can become the second napkin to be used as given below under "Changing Napkins." Tuck the baby warmly in cot. The nurse then washes her hands.

After each use the bath must be thoroughly cleansed with a clean cloth and sandsoap, or some other suitable cleanser, and then well rinsed. The cloth should be boiled daily. Mops and disinfectants should not be used.

No baby should be immersed in a bath until the cord has separated.

Changing Napkins

(1) Separate washing-cloths should be provided for each baby for cleaning and drying the baby's buttocks. Cloths can either be discarded after use or washed and sterilized by boiling before being used again. Bath or basin used must be thoroughly cleansed after each baby.

(2) Soiled or wet napkins must be placed in a covered bucket as soon as they are removed from the body; they must on no account be placed on the floor or elsewhere.

Before being sent to the laundry, napkins should be cleansed of all gross fæcal matter by placing them in a wire-mesh receptacle in a sink under running water. Handling should be avoided as much as possible. If a brush is used to remove fæcal matter, it should have a handle, and as it is a ready carrier of infection should be boiled after use. After cleansing of gross matter, the napkins are sent to the laundry in a bucket to be washed and boiled.

(3) If the baby is not changed in its own cot, a clean napkin is to be placed on the board. This napkin must be kept for that individual baby and must on no account be used for any other baby. The procedure to be carried out is as follows:—

With the baby covered only with the "cuddling" blanket, lay the baby on a clean napkin. Cleanse the baby's buttocks with one or more special washing-cloths, discarding them after use into a receptacle provided. Dry buttocks. Put on a clean napkin. Take the baby back to the cot and finish dressing by wrapping the napkin on which the baby was placed round the buttocks and legs over the pinned napkin. Make up the cot and leave the baby comfortable. On no account is the large blanket used to carry the baby to the mother to be taken into the change-room. If practicable, the baby should be taken into the change-room in his own cot. On completion of the procedure, the nurse thoroughly washes her hands, preferably under running water.

Taking of Temperature

If it is found necessary to take the baby's temperature per rectum, great care must be taken to avoid any spread of infection. The bulb of the thermometer is lubricated with a vaselined swab and *not* by dipping into a jar of lubricant. After use, carefully wipe the thermometer before shaking down, and the wipe discarded. The thermometer is then to be immersed in Cyllin 1–160, in which it must remain for at least ten minutes before being used again. If more than one baby is on a temperature chart, it is preferable that individual thermometers be kept, labelled and in separate jars. On no account must methylated spirits be used as a disinfectant for thermometers. The nurse must always wash her hands carefully after taking baby's temperature.

The above is a brief outline of the nursing technique to be taught trainees.

MATERNITY DISTRICT PATIENTS

The maintenance of asepsis is as necessary in nursing patients in their own homes as in hospitals, and, as has already been pointed out, means of sterilizing basins, bedpans, &c., may have to be improvised and other arrangements made with regard to the supply of utensils, &c. When possible the nurse should visit the house two or three weeks before labour is due and instruct the patient regarding the preparation of the room and arrange for the requisite supplies for conducting labour and the puerperium with adequate aseptic precautions. In the case of a District Nurse attending very poor people, she should know where she can obtain as gifts or on loan from hospitals, social welfare committees, or other similar organizations, the necessary supplies that the patient cannot afford.

Equipment

The scheme assumes that dry steam-sterilized outfits for labour and the puerperium are at hand. Such outfits should be prepared early and sterilized in the eighth month of pregnancy, and be ready in the patient's home at the time of labour. Arrangements for their sterilization can be made through the ante-natal clinics, or they will be sterilized at a small cost at any public hospital—general or maternity. In "Suggestions to Expectant Mothers" full particulars are given of the methods of packing and sterilizing outfits with simple equipment which without undue expense or trouble can be made available in any ordinary house. The labour outfit of dressings which is to be ready in the house prior to labour does not contain a nurse's gown. This the nurse should take with her, and it must be packed in a secure covering and sterilized therein.

The nurse's outfit for district work which she takes with her is as follows:—

A bag or case of leather or compressed fibre—the latter is the lighter—lined with a removable and washable lining with compartments for bottles and containing the following articles:—

(1) A douche-can with rubber-tube clip and vaginal and rectal nozzles—the former of glass—and wrapped ready for sterilization.
(2) Two 5 in. basins and one 10 in. kidney-tray.
(3) Two clean nail-brushes.
(4) A cake of yellow soap.
(5) A small supply of sterilized cotton-wool, tow, or sterilized cotton or linen rags.
(6) Two pairs of rubber gloves or one pair of gloves and two guarded finger-stalls in a clean wrapper for rectal and vaginal examinations.
(7) A clean towel.
(8) A mackintosh sheet.
(9) Two overalls—one dry sterilized in a wrapper.
(10) A clinical thermometer.
(11) Surgical scissors.
(12) Two pairs artery and 2 pairs of dissecting forceps.
(13) Female rubber catheter.
(14) Laryngeal catheter of gum elastic or rubber.
(15) A district register-book.
(16) A 4 oz. bottle of Cyllin, a jar of Dettol paste.
(17) A 2 oz. bottle of tincture of iodine.
(18) Two oz. liquid extract of ergot for use after the third stage.
(19) Two oz. of brandy for use in restoring an asphyxiated infant.
(20) A glass jar containing a strong sterile cotton for tying the cord.

The wet outfit of dressings (*b*) (page 10) and the utensils, nail-brushes, &c. (sterilized appliances, pages 11 and 15), are to be sterilized between two 14 in. basins or in a suitable boiler large enough to permit them to be completely immersed in the boiling water or to be covered with a well-fitting lid that will retain the steam. The 8 in. bowls to be sterilized may be ordinary kitchen basins of a suitable size, and the 3 in. bowls can be replaced by cups.

NURSE'S DUTIES ON THE DISTRICT

1. A maternity-nurse trainee should not be sent out to assist a doctor in district work until she understands how to prepare a patient for labour and to carry out the aseptic technique. If she is a registered nurse this will be in about her third month, and if untrained about the seventh month.

2. A primipara is not to be left after the second stage has begun.

3. A multipara is not to be left after the os is the size of half a crown, without the permission of the Sister in charge of the district work.

4. After the expulsion of the placenta the patient is to be kept under observation for half an hour to ensure that contraction of the uterus is maintained and there is not undue hæmorrhage.

5. The infant should be put to the breast, and, if necessary, the mother instructed concerning breast-feeding.

6. The nurse is to remain for not less than one hour after the end of the third stage, and before leaving is to make the patient clean and comfortable. Remove all soiled linen from the room and put it in to soak, and leave the room clean and tidy.

7. Write up all records, including the pulse and temperature.

8. Finally she must carefully instruct the patient and attendant on the points to be observed in feeding the patient, putting the baby to the breast, handling the sterilized vulvar pads, the use of antiseptics, sterilizing the hands, and make as sure as possible that the attendant or other residents of the house are not suffering from any septic or infectious conditions that might endanger the patient. If such conditions are present she should include them in the report and immediately call the special attention of the Sister in charge of the district nursing to the fact in order that precautions may be taken.

9. During the remainder of the lying-in period the nurse should visit the patient twice a day for at least three days and once a day thereafter, and at each visit she is to pan her, record the pulse, temperature, and the condition of the lochia, and as far as possible see that her instructions have been carried out. She is also to note that the patient is passing urine normally, that her bowels are regular, and the condition of the uterus and the patient's general condition are satisfactory.

10. The baby is to be examined and its general condition and the state of the cord noted, and the baby's and patient's record to be written up.

GENERAL INSTRUCTIONS ON VARIOUS MATTERS

The Routine Examination of Patients

It is essential that trainees should be given the opportunity of examining the greatest number of patients possible, as without ample experience they cannot learn. All forms of external examination can be practised without injury to the patient. Rectal examinations also are free from danger, so long as the soiled gloves are carefully washed and boiled afterwards. Vaginal examinations, in practice, should only be made when necessary, but in a teaching hospital it is essential that midwife trainees and students generally should get experience in making them. For this reason it is necessary to allow at least two vaginal examinations on each patient, unless there are special circumstances rendering them inadvisable. One rectal examination and one vaginal examination may be made by the trainee during the first stage, and one vaginal examination shortly after the membranes rupture.

The trainee who is to conduct the case is to be given every opportunity of making the different forms of examination under the supervision of the tutor midwife.

The different forms of examination to be carried out by the trainee are as follows, and in every case the result is to be charted:—

(1) General inspection of the patient.
(2) Palpation of the abdomen.
(3) Auscultation of the fœtal heart.
(4) External pelvimetry.
(5) The examination of the urine.
(6) Rectal examination.
(7) Vaginal examination. (Midwife trainees only.)

The Use and Care of the Bedpan and the Chamber

The following rules regarding the use of the bedpan and the chamber should be carefully followed in all cases:—

Unless the bedpan and chamber can be sterilized each time after use and kept on suitable racks to prevent contamination until used again, each patient must have a bedpan and chamber for her own individual use. These are to be marked with her name, and, if possible, kept in a specially designed locker by the side of the bed or in hanging bags attached to the locker for that purpose. After each time they are used they are to be carefully cleansed and put back in their places, thus ensuring that no bedpan or chamber which has been used for one patient is transferred to another. When the patient is discharged the bedpan and chamber are to be thoroughly cleansed and then boiled in its own bag for five minutes and allowed to dry in the bags. They are then put back in the locker alongside the bed for which they are allotted, or in the rack and kept in the bags until again put into use for the next patient.

The chamber is to be used at each panning, unless the special circumstances of the case make her unable to sit up, in which case a second bedpan must be provided for her in place of the chamber.

After the patient leaves, the lockers are to be thoroughly scrubbed with soap and water.

Each chamber or bedpan is to have its own cover of sterilized paper or a washable material which should be washed and boiled as occasion requires.

The Care of Bedsteads

Bedsteads should be made of iron and be of a standard hospital pattern. On discharge of a patient the bedstead is to be thoroughly cleaned. A bottle-brush is very useful for this work, as the bristles get into all the springs and corners.

The Care of Mattresses

All mattresses must have a removable cover which on discharge of the patient is to be replaced with one which has been washed and boiled. The mattress itself when infected should be sent with the blankets and pillows to be fumigated or sterilized in a high-pressure steam sterilizer.

The Care of Linen

All stains should be removed and the linen sent to a laundry to be boiled. Washing in machines in which boiling does not take place must be supplemented by boiling.

Care of Enamelware—Basins, Bowls, &c.

These articles should be scrubbed with soap, washed clean, and boiled for five minutes.

Routine Cleaning and Disinfection of Wards and Furniture

Wherever it is possible to do so the lying-in wards shall be used in rotation, so that time shall be allowed for thoroughly cleansing and airing each ward. If asepsis has been maintained and the patient has run a normal temperature, the only other precautions to be taken are to replace the washable cover on the mattress with a clean cover and to thoroughly clean the locker inside and out.

If the room has been occupied by a patient who at any time during her stay in hospital has suffered from a febrile condition or she has shown other signs of possible infection, the room should be kept unused for a sufficient time to allow the thorough disinfection of the furniture, and, in addition, the floor should be scrubbed and it and the walls and furniture exposed to sunlight and fresh air. Fumigation of large spaces is not advised. Fresh air, light, and thorough cleaning are more effective and cannot be dispensed with by spraying or fumigation, which can only act effectively in confined spaces.

NOTES ON DISINFECTANTS

Cyllin, Dettol, and Pynol are specially suitable for use in maternity hospitals as they have a selective action on the streptococcus. Kerol, Restar, and Chenol being cheaper, and having a good carbolic coefficient, are very suitable for disinfecting excreta. An equal quantity of solution of double the strength required should be added to the excreta. Lysol and Wyandotte Steri-chlor are specially suitable for disinfecting linen as they do not stain or leave an odour. The solution should be thoroughly mixed before placing the linen in it.

For utensils, wiping over woodwork, bedsteads, &c., any good disinfectant is suitable, but obviously the cheaper ones are to be preferred.

The use of warm solutions (blood heat) greatly enhances the effective action of a disinfectant.

Care should be taken to dilute disinfectants to the *exact* strength required. If guesswork is relied on the solution may be too dilute and be ineffective, or unnecessarily strong and therefore wasteful.

Infected linen should be disinfected for four hours. Utensils should be washed and then boiled.

No other disinfectants should be used until inquiry has been made from the Department as to its efficiency.

TABLE OF SUITABLE DISINFECTANTS

Hands:—

Cyllin, 1:480 (1 dr. to 3 pints).
Dettol, 1 teaspoon rubbed into hands after washing or 30 per cent. Dettol in Tragacanth paste.
Pynol, 3 dr. to 1 pint.

Linen:—

Cyllin, Kerol, Restar, Chenol, 1:80 (2 oz. to gallon).
Lysol, carbolic acid (crude), 1:40 (4 oz. to gallon).
Formalin, 1:20 (8 oz. to gallon).

Mix the solution before putting in the linen.

Utensils:—

Same strengths as above. Kerol, Chenol, Restar, and carbolic acid are cheapest to use.

Floors, Furniture, &c.:—

Restar, Chenol, 1:40 (4 dr. to 1 pint).
Carbolic Acid, Lysol, 1:20 (1 oz. to 1 pint).
Formalin, 1:10 (2 oz. to 1 pint).

Lotions:—

Cyllin, 1 dr. to 3 pints.
Dettol, 3 dr. to 1 pint.
Soak linen and utensils for four hours.

Disinfectants in black type are those considered most suitable for the purpose by reason of their special characteristic or their low cost.

DIETARY SECTION

Nutrition in Pregnancy and Lactation

A number of recent reports on experiments in Britain and U.S.A. have gone to establish the beneficial effect of a good dietary in pregnancy and lactation on the course of the pregnancy, the ability to produce milk, and the reduced susceptibility of the infant to the risks of death from prematurity or from disease during the first year of life. Among the advantages to the mother are (1) diminished incidence of pregnancy toxæmia; (2) fewer obstetrical complications; (3) better course of parturition; (4) enhanced milk-supply.

The dietary section is issued in the hope that it may be of assistance to those who have the supervision of maternity cases; it has been drawn up largely because of the inquiries that have come from the many nurses working in the obstetrical field who are anxious to do the best for those in their charge. Apart from these inquiries, the disquieting low percentage of mothers in New Zealand who are able to breast-feed their babies offered sufficient stimulus for the issue of this information. That a properly breast-fed baby has an advantage over an artificially fed baby is agreed; this opinion has been reasserted on two occasions of late—by a conference in the Royal Society of Medicine, and by a meeting of the Nutrition Society. The importance of breast-feeding to the new-born is expressed in the following terms by Waller in "Clinical Studies in Lactation": "To each and every baby, it is the flying start that matters." He gives an instance of a baby that lost weight in the first three weeks of life because its mother's lactation had failed. Though it was given artificial feeding and had begun to put on weight rapidly, it caught a common cold, and within a few days it was dead. "It died from its failure to get a flying start, and that in turn was due to its mother's lack of sufficient breast milk. Nothing is more striking than the high resistance to catarrhal infections of the successfully breast-fed. To found a case on a single instance of this kind would be absurd, but breakdowns of this nature and due to this cause are so numerous that for many years we have had special arrangements here to deal with them." There are many factors in the attention to the breasts and the preparation for lactation that need supervision; proper dietary is only one of them, but in so far as the dietary needs attention, this section confines itself to that aspect.

The dietary required for optimal health by an expectant mother is of a higher nutritional standard than that needed by the ordinary adult. That required by the nursing mother is of a still higher standard. Recent conferences of nutritionists have settled a tentative desirable standard of nutrients. Scientifically put, they are as follows:—

—	Calories.	Protein.	Ca.	Fe.	Vitamin A.	Thiamine (B$_1$).	Riboflavin.	Nicotinic Acid.	Ascorbic Acid.
		G.	G.	Mg.	I.U.	Mg.	Mg.	Mg.	Mg.
Adult woman ..	2,500	60	0·8	12	5,000	1·5	2·2	15	70
Pregnancy (latter half)	2,500	85	1·5	15	6,000	1·8	2·5	18	100
Lactation ..	3,000	100	2·0	15	8,000	2·3	3·0	23	150

Put into more homely terms, the foods required daily by an expectant mother are as follows:—

FOODS FOR THE EXPECTANT MOTHER

Milk: 1¾ pints (alternatively, skim-milk or skim-milk powder, especially if tendency to weight increase).

Meat: 4 oz. (liver once a week—or kidneys. Fish once a week).

Egg: 1.

Cheese: 1 oz.

Green vegetables, cauliflower, or swedes: Not less than 4 oz.

Potato: 5–10 oz.

Carrot or other vegetable: ½ cup (cooked measurement).

Orange or tomato (or grapefruit, lemon, black currants, strawberries, rose-hip syrup, gooseberries).

Other fruit: 4 oz.—*e.g.*, apple, banana, or prunes, &c. (Some raw fruit or vegetable to finish the meal will help to prevent tooth decay.)

Cod-liver oil: 2 teaspoons daily (or substitute).

Butter: 1 oz. daily.

Wheat-germ: 2 tablespoons daily; or peanuts, 1 oz.; or peas, beans, or lentils, ½ cup cooked.

Whole-grain cereals (oatmeal, wholemeal bread): to satisfy the appetite and maintain the normal weight increase. If the weight goes up too rapidly, restrict (under medical direction) (*a*) fats, (*b*) carbo-hydrate foods, (*c*) salt intake.

Iodized salt: A teaspoonful a day; or seameal, 2 teaspoons daily (in cooked foods, &c.).

Comments

Special emphasis is placed on the necessity for milk, meat, cheese, eggs, calcium, iron, iodide, and vitamins. It now appears definitely established that protein foods do not increase the susceptibility to pregnancy toxæmia, though there is some support for the belief that the salt which is often taken to excess with them may be harmful. It is advisable meantime to caution the patient against taking too much salt, as this increases the tendency to œdema. Whatever salt is taken should be the iodized variety, for the pregnancy period is particularly the period when goitre commences in both the infant and the mother. Enough iodide is provided by a total of a teaspoonful of the salt a day used in home cooking. As an alternative, the *daily* use of seameal (2 teaspoons) provides the iodine required; while cod-liver oil also contributes a certain amount of it. It is worth striving to minimize the risk of goitre in the coming generation by insistence on sufficient iodine.

Of the vitamins, the one which is very seriously lacking in the New Zealand diet is vitamin D. The precaution of taking 2 teaspoons of cod-liver oil (or other equivalent such as halibut-liver oil or other concentrated oil or adexolin) should be emphasized in ante-natal clinics.

Another frequent defect in the usual New Zealand dietary is calcium, of which no food other than milk can provide enough. It should be the conscientious duty of every expectant and nursing mother to take her necessary quota of milk—1¾ pints (whole or skim).

The intake of iron is also either defective or border-line in many New Zealand households. The best foods for providing iron are liver, oysters, kidneys, and heart. Eggs, peas and beans, potatoes, green vegetables, fruits, and meats are next in importance. About 10 per cent. of New Zealand expectant mothers develop an anæmia which can be prevented by taking these foods, provided that no other deficiency—for example, of vitamin C—occurs at the same time.

Vitamin A is unlikely to be deficient, as long as the quota of milk, butter, and cod-liver oil are taken.

Vitamin B factors are another matter. It is difficult to achieve the requirements unless attention is paid to the dietary. Charts are included as a guide to the choice of foods containing vitamin B_1. As increased quantities of this vitamin are used by the pregnant woman, and as vitamin B_1 is necessary to prevent the neuritis of pregnancy, perhaps also to prevent the mental derangements of the puerperium, and as vitamin B_1 is furthermore concerned with the establishment of the milk-supply, it is important to include good sources of this vitamin.

Other constituents of the vitamin B complex tend also to be lacking in the New Zealand dietary. Riboflavin is supplied principally by milk, liver, whole-grain cereals, legumes, eggs, Marmite, meats, and vegetables. Of these, milk is usually the chief contributor because of the quantity that can be taken.

Nicotinic acid is supplied largely by meats, peanuts, potato, Marmite, whole-grain cereals, meat extract.

Vitamin C.—A chart is included to show the relative values of the different foods for supplying vitamin C. In order to avoid losses, precautions need to be taken in the cooking and serving of vegetables; green vegetables are a very important source, particularly in wartime; they should be put into a small quantity of boiling slightly salted water, brought quickly to the boil, cooked for the shortest time necessary to make them tender, and *served as soon as possible*; in addition, the vegetable water must be used—*e.g.*, for soups, sauces, gravies. Less vitamin C is present in old potatoes than in new potatoes, and less is obtained from mashed potatoes kept hot than from whole potatoes. Thus in late winter and in spring, when potatoes often have to be mashed, green vegetables become even more important. Potatoes baked in their jackets are nutritionally good, as well as being popular. It is a wise safeguard to include rose-hip syrup, orange-juice, or tomatoes, &c.

Vitamin D.—Cannot be obtained in amounts sufficient for the expectant and nursing mother unless either (1) cod-liver oil, 2 teaspoons a day, are taken; (2) sunshine falls directly on the skin—*i.e.*, it is no good expecting the sunshine to be of much use if it comes through glass or through clothes for the ultra-violet rays are thus kept back.

Eggs, butter, and milk contain only small amounts by comparison with cod-liver oil (or substitute) or with the flesh of eels.

Vitamin D is one of the factors concerned with laying down good tooth structure. Whatever we can do to improve the teeth of the future generation should be our particular concern. Other factors are, of course, also responsbile for good tooth structure.

It is extremely important that the expectant mother should take milk (at least 1¾ pints), eggs, liver, meat, fish, pulses, whole-grain cereals, plenty of vegetables, an orange (or substitute), plus fruit.

If she takes 1¾ pints of milk a day, only a little additional fluid is required.

Restriction of food intake does not diminish the size of the fœtus at birth, and it is therefore undesirable to advocate such restrictions.

As it is a fairly difficult matter to make up the dietary to what is now considered by nutritionists to be the optimum for successful lactation, specimen menus for ten days have been prepared. Note that the quantities of the various foodstuffs to be served have been given. It is only by serving these quantities that the menus conform to current beliefs as to the requirements of average women during this period.

These menus are suitable for the woman who has passed the initial period of the first few days following labour. The usual practice in New Zealand maternity hospitals is to prescribe a light diet for the first two days or so. Adair advises a dietary for these early days founded on a basic ration of 1¾ pints of milk, 1 egg, 1 serving of meat; he also includes 100 grams of raw* vegetables and 100 grams of raw fruit or fruit juice. Adair's regimen for the patient in actual labour is also given:—

Diet for Patients in Labour

For patients in whom short labour is anticipated, nothing except fluids leaving no residue should be given during labour. No fluids or solid foods of any description should be given to a patient in labour where delivery is expected within two hours. The following suggestions are made relative to the food and fluid intake of patients who are in actual labour: in patients well advanced in the first stage and in multiparæ in whom a long labour is not anticipated, no food of any description leaving a solid residue should be given. In all cases in labour except those in the very early stages the following may be given: tea or coffee, sweetened; broth or clear soup; water; fruit juices, sweetened; tomato-juice.

In more protracted labours, fruit juices may be sweetened with sugar and a teaspoonful of lactose added.

Fluids should be administered in small quantities, not to exceed 2 oz. at a time, and should not be repeated more frequently than thirty minutes.

In primiparæ or in multiparæ in whom a long first stage is anticipated the following is given (by Adair):—

Breakfast—
- Tea or coffee, sweetened: 4 oz.
- Plain or lightly buttered toast: 1–2 slices.
- Fruit juice, sweetened: 8 oz.

Forenoon—
- Water or fruit juice, sweetened: 6 oz.

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* Cooked vegetables are usually more acceptable in New Zealand, and are suitable provided that they have been cooked without too much loss of nutritional value; indeed, because of the greater quantity that can be eaten and digested, they frequently provide even more vitamin C than the lettuce, &c., that are commonly eaten in salads. This statement applies to vegetables that have been prepared, cooked, and served with the speed that pertains in a well-run household. The requisite speed is not always possible in an institution, for the time required for each stage is lengthened in large-scale cookery, leading to losses of vitamin C.

Mid-day—

Tea, sweetened: 6 oz.
Toast or water biscuit.
Broth or clear soup: 6 oz.
Tomato-juice or orange-juice (sweetened): 4 oz; with water, 2 oz.
Fruit juice: 6 oz.

Afternoon—

Water or fruit juice: 6 oz.

Teatime—

Tea (sweetened): 4 oz.
Toast or cracker.
Broth or clear soup: 6 oz.
Fruit juice, sweetened: 6 oz.

Late evening and night—

Water and fruit juices, total of 16 oz.

No solid food during the second stage. In protracted labours, all fruit juices sweetened with sugar, and then an additional teaspoonful of lactose added.

Diet for the First Few Days following Labour

The following have been worked out for your guidance on the basis of the recommendations made by Adair:—

First Three Days of Lactation Period.—Milk, $1\frac{3}{4}$ pints; egg, 1; fish, steamed, 4 oz.; green vegetable or cauliflower or swede, $3\frac{1}{2}$ oz.; potato, $3\frac{1}{2}$ oz.; butter, 1 oz.; oatmeal, 1 oz.; bread, wholemeal or germ, 4 oz.; fruit, as apple, banana, &c., 4 oz. or more; rose-hip syrup, 1 tablespoon; cod-liver oil, 2 teaspoons (or halibut-liver oil, &c.); tomato or orange; wheat-germ, 2 tablespoons, or peanuts, 1 oz.; sugar, 1 oz.; beef-tea, a cup.

(Calories, 1,950; protein, 84 g.; fat, 82 g.; calcium, 1·4 g.; iron, 9 mg.)

Fourth and Fifth Days of Lactation Period.—Milk, $1\frac{3}{4}$ pints; egg, 1; meat, 4 oz.; cauliflower, green vegetable, or swede, $3\frac{1}{2}$ oz.; potato, 5 oz.; oatmeal, 1 oz.; bread, wholemeal or germ, 4 oz.; apple or other fruit, 4 oz. or more; rose-hip syrup, 2 tablespoons; cod-liver oil, 2 teaspoons (or halibut-liver oil, &c.); tomato or orange; wheat-germ, 2 tablespoons, and/or peanuts, 1 oz.; butter, 1 oz.; sugar, 1 oz.

(Calories, 2,307; protein, 93 g.; fat, 108 g.; Ca., 1·4 g.; Fe., 12·8 mg.)

Sixth and Seventh Days of Lactation Period.—Milk, 1¾ pints; egg, 1; meat, 4 oz.; bacon, 2 oz.; potato, 5 oz.; oatmeal, 1 oz.; green vegetables, cauliflower, or swede, 3½ oz.; bread, wholemeal or germ, 4 oz.; dried prunes, a serving; butter, 1 oz.; cornflour or other cereal, 1 oz.; rose-hip syrup, 2 tablespoons; cod-liver oil, 2 teaspoons; vegetable broth with meat extract, a cupful; wheat-germ, 2 tablespoons, and/or peanuts, 1 oz.; black-currant jam, 1 tablespoon; banana, or tomato, or orange, &c.

(Calories, 2,704; protein, 100 g.; fat, 127; Ca., 1·4 g.; Fe., 15 mg.)

Menus for the subsequent dietaries of the lactating woman now follow. In constructing them, the difficulties in bringing the dietaries up to modern standards arose chiefly in regard to vitamin B factors. It is hoped that comprehensive charts relating to the chief members of the vitamin B complex will shortly be available. It can be here stated that milk is the most valuable daily source of riboflavin, while the best occasional contributors of riboflavin and nicotinic acid are liver and kidney; meats are the best of the constant sources of nicotinic acid, but peanuts are a very good source—they have been included partly for this reason, and partly for the reputation that is often given them by maternity nurses for their regulatory function and their ability to enhance milk-production.

In addition to vitamin B factors, difficulty was experienced in getting the vitamin C up to a good standard unless rose-hip syrup was included daily.

Following the menus are some notes on diabetes in relation to maternity practice, and some notes on the present-day attitude to the dietary aspects of pre-eclampsia. In the former the advice is given to supply lactose to the new-born infant to prevent hypoglycæmia. In some midwifery hospitals, lactose solution is given as a routine to all new-born babies to tide them over till the milk secretion is established, thus preventing weight loss.

It may be found that certain individuals are unable to take certain of the foods in the above list. This will require individual adjustment. Foods containing roughage are sometimes upsetting; sometimes a cooked food will be better tolerated than an uncooked one. These points have to be found out individually, and the appropriate adjustments made. For example, if wheat-germ sprinkled on porridge or on fruit causes indigestion, try whether it is better tolerated when it is cooked in with the porridge—having first of all made sure that the sample of wheat-germ is a good one and that its effect is not simply due to its rancidity. Raw peanuts have better nutritional value than roasted peanuts or peanut-butter; but if the mother finds that raw peanuts are upsetting, it will then be better to roast them. If wholemeal bread causes intestinal disturbances, white bread or potatoes will have to be used. And so on.

It is difficult to get certain of the foods that are particularly valuable for the expectant and nursing mother; partly this is due to war conditions, partly to other factors. Liver is an extremely valuable food, but is often unobtainable. There would be twice as much liver available if we took our hydatid problem seriously and took the precaution to prevent the infection of the sheep by getting rid of the trouble in the dogs that infect the sheep.

THE NURSING MOTHER

The nursing mother needs even more dietary attention than the expectant mother. There is no doubt about the fact that she has to eat for two: the child is now growing at a faster rate than before it was born; moreover, its heat loss is greater now that it is a separate unit. Thus there is need for increased calories, as well as for protein, minerals, and vitamins in greater amounts. The period in the nursing home should be the time when an example is set of what food she should consume during the whole of her nursing period.

The care of the breasts prior to and after parturition is extremely important (see Waller, "Clinical Studies in Lactation"). Apart from this, the quantity of milk which she is able to produce depends on the following factors: (*a*) a contented mind; (*b*) the diet prior to parturition; (*c*) the diet following parturition; (*d*) endocrine factors.

The most important dietary factors for enhancing her ability to produce milk are protein and vitamin B factors. There are other things also which are needed either to prevent losses from her own body or to supply the nutrients needed by the child—for instance, calcium, vitamin C and D. The two latter vitamins should reach the child either through the mother's milk or through a special supplement. The method of giving cod-liver oil, and vitamin C in the form of orange-juice or rose-hip syrup, to the baby is a wise precaution in case the mother is not getting enough of these nutrients. If one aims at the standard of 150 mg. per day, a rich source like rose-hip syrup must be included.

The foods required by the nursing mother are—

Milk: $1\frac{3}{4}$–2 pints (the latter, or even more if she is feeding twins).

Meat: 4–6 oz. (liver, 2 oz., once a week; fish, once or twice a week; bacon or pork, if they agree with both mother and baby).

Egg: 1.

Cheese: 1 oz.

Peanuts, peas, beans, or lentils: A serving.

Wheat-germ: 2 tablespoons (a freshly milled product is necessary).

Green vegetables, cauliflower, or swedes: $\frac{1}{2}$ cup ($3\frac{1}{2}$–4 oz.).

Potato: 5–10 oz.

Another vegetable: $\frac{1}{2}$ cup.

Orange; or $\frac{1}{2}$ lb. tomatoes; or 2 tablespoons rose-hip syrup (or alternative rich source of vitamin C).

Other fruit.

Cod-liver oil: 2 teaspoons a day.

Iodized salt (or 2 teaspoons seameal daily).

Butter: 1 oz. daily, and fat (or butter), 1 oz. daily.

Wholegrain cereals: Enough to satisfy the appetite.

AMOUNTS OF FOODS IN TEN-DAY MENUS FOR NURSING MOTHERS

First Day.		Second Day.		Third Day.		Fourth Day.		Fifth Day.	
Milk (pints)	1¾	Milk (pints)	1¾	Milk (pints)	1¾	Milk (pints)	1¾	Milk (pints)	1¾
Egg	1	Bacon (oz.)	2	Fish (oz.)	4	Egg	1	Fish (oz.)	4
Cheese (oz.)	1	Meat (oz.)	3½	Cabbage (oz.)	3½	Liver (oz.)	2	Cheese (oz.)	1
Meat (oz.)	4	Potato (oz.)	7	Rabbit (oz.)	3½	Bacon (oz.)	2	Cabbage (oz.)	3½
Bacon (oz.)	2	Lettuce (oz.)	2	Potato (oz.)	7	Potato (oz.)	7	Potato (oz.)	7
Potato (oz.)	7	Mint, chives, cress.		Carrots (oz.)	3½	Parsnip (oz.)	3½	Swede (oz.)	3½
Spinach (oz.)	3½	Tomato (oz.)	3½	Gooseberries (oz.)	3½	Cauliflower (oz.)	3½	Celery (oz.)	5
Carrots (oz.)	3½	Dates (4) (oz.)	1	Sugar (oz.)	2	Onion (oz.)	2	Apple (oz.)	4
Prunes	3½	Butter (oz.)	1	Butter (oz.)	1	Lettuce (oz.)	2	Bread, wholemeal (oz.)	4
Butter (oz.)	1	Fat (oz.)	1	Fat (oz.)	1	Bread, wholemeal (oz.)	4	Oatmeal (oz.)	1½
Fat (oz.)	1	Oatmeal (oz.)	1	Apple (oz.)	4	Fat (oz.)	1	Butter (oz.)	1
Cornflour (oz.)	1	Wheat-germ (oz.)	⅔	Bread, wholemeal (oz.)	4	Oatmeal (oz.)	1	Wheat-germ (oz.)	⅔
Oatmeal (oz.)	1	Bread, wholemeal (oz.)	4	Oatmeal (oz.)	1	Wheat-germ (oz.)	⅔	Fat (oz.)	1
Bead, wholemeal (oz.)	4	Apple (oz.)	4	Wheat-germ (oz.)	⅔	Butter (oz.)	1	Sugar (oz.)	1
Apple (oz.)	4	Cod-liver oil (teaspoon)	2	Honey (tablespoon)	1	Cod-liver oil (teaspoon)	2	Cod-liver oil (teaspoon)	2
Orange-juice (oz.)	2½	Peanuts (oz.)	2	Rose-hip syrup (tablespoon)	2	Rose-hip syrup (tablespoon)	2	Rose-hip syrup (tablespoon)	2
Rose-hip syrup (tablespoon)	1	Rose-hip syrup (tablespoon)	2	Cod-liver oil (teaspoon)	2				
Cod-liver oil (teaspoon)	2			Peanuts (oz.)	1				
Sugar (oz.)	1								
Wheat-germ (oz.)	⅔								

Sixth Day.		Seventh Day.		Eighth Day.		Ninth Day.		Tenth Day.	
Milk (pints)	1¾	Milk (pints)	1¾	Milk (pints)	1¾	Milk (pints)	1¾	Milk (pints)	1¾
Egg	1	Egg	1	Egg	1	Egg	½	Egg	1
Meat (oz.)	3½	Meat (oz.)	3½	Veal (oz.)	3½	Meat (oz.)	6	Steak (oz.)	2
Bacon (oz.)	2	Oysters (oz.)	3½	Fish (oz.)	2	Potato (oz.)	7	Kidney (oz.)	1
Cheese (oz.)	1	Potato (oz.)	5	Cheese (oz.)	1	Swedes (oz.)	3½	Potato (oz.)	7
Potato (oz.)	10	Kumera (oz.)	3½	Peanuts (oz.)	1	Spinach (oz.)	3½	Peas (oz.)	3½
Cauliflower (oz.)	3½	Silver-beet (oz.)	3½	Beans, dried (oz.)	1	Beetroot (oz.)	1¾	Cabbage (oz.)	3½
Lentils (oz.)	1	Lettuce leaves	4	Tomatoes (oz.)	3½	Cabbage (oz.)	2	Apple (oz.)	4
Parsnips	3½	Gooseberries (cup)	½	Potatoes (oz.)	10	Peas, dried (oz.)	1	Carrot (oz.)	3½
Apple (oz.)	4	Orange	1	Apple (oz.)	7	Apricots (dried), (oz.)	1	Prunes (oz.)	3½
Tomatoes (oz.)	3½	Oatmeal (oz.)	1	Carrots (oz.)	3½	Bread, wholemeal (oz.)	4	Rose-hip syrup (tablespoon)	2
Bread, wholemeal (oz.)	4	Bread, wholemeal (oz.)	4	Brussels sprouts (oz.)	3½	Oatmeal (oz.)	1½	Gelatine (tablespoon)	½
Butter, fat, each (oz.)	1	Butter (oz.)	1	Bread, wholemeal (oz.)	4	Butter (oz.)	1	Bread, wholemeal (oz.)	4
Rice, brown (oz.)	1	Wheat-germ (oz.)	⅔	Butter (oz.)	1	Cod-liver oil (teaspoon)	2	Wheat-germ (oz.)	⅔
Cod-liver oil (teaspoon)	2	Cod-liver oil (teaspoon)	2	Cod-liver oil (teaspoon)	2	Rose-hip syrup (tablespoon)	2	Butter (oz.)	1
Rose-hip syrup (tablespoon)	2	Banana (oz.)	3½	Rose-hip syrup (tablespoon)	1	Black-currant jam (tablespoon)	1	Peanuts (oz.)	1
Flour (oz.)	1	Sugar (oz.)	1	Sugar (oz.)	1	Sugar (oz.)	1	Sugar (oz.)	1
Sugar (oz.)	1	Radish (oz.)	1	Marmite (teaspoon)	1	Tablet of vitamin B_1.		Cocoa (teaspoon)	1
Cocoa (teaspoon)	1	Cocoa (teaspoon)	1	Onion (oz.)	1¾			Cod-liver oil (teaspoon)	2
				Flour (oz.)	1			Parsley sprigs	5
								Flour (oz.)	1

Dietaries for Nursing Mothers

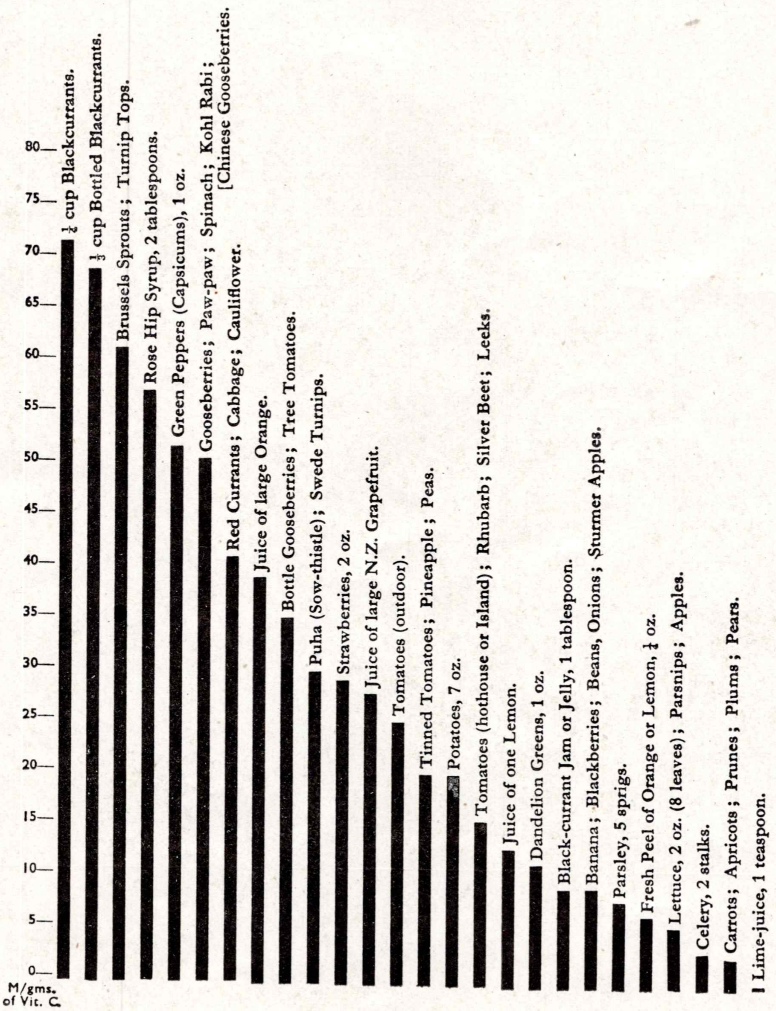
Monday.	Tuesday.	Wednesday.	Thursday.	Friday.
5.30 a.m.				
Early morning cup of tea with bread and butter.	Ditto.	Ditto.	Ditto.	Ditto.
Breakfast				
Porridge; wheat-germ; and milk. Bacon and apple. Wholemeal bread or toast; butter and marmalade; or Marmite, or honey. Coffee made with milk; or milk to drink.	Porridge; wheat-germ; and milk. Or stewed fruit and wheat-germ. Wholemeal bread; butter; marmalade or honey or Marmite. Coffee made with milk; or milk.	As for Tuesday.	As for Tuesday.	As for Tuesday.
Mid-morning				
Vegetable milk soup.	Vegetable milk soup.	Vegetable milk soup.	Vegetable broth.	Vegetable soup.
Dinner				
Roast mutton. Potatoes; spinach; carrots. Stewed prunes; blancmange. Orange-juice.	Cold meat. Mixed salad; baked potato. Baked date custard. Glass of milk. Peanuts. Raw fruit.	Stewed rabbit. Potato; carrots; cabbage. Stewed gooseberries; junket. Glass of milk. Raw apple.	Liver and bacon casserole. Baked potato; roast parsnip; cauliflower. Steamed pudding. Milk.	Baked fish. Baked potato; cabbage; swede. Fruit flummery. Glass of Milk.
Afternoon				
Afternoon tea with bread and butter.	Ditto.	Ditto.	Ditto.	Ditto.
Tea				
Cheese custard. Salad. Wholemeal bread and toast. Butter. Honey or fruit jelly. Cup of tea.	Bacon and tomato. Toast and bread, butter, &c. Cheese.	Fish pie; or brains. Toast and bread, &c. Cup of tea. Peanuts.	Boiled egg. Lettuce and cress. Toast and bread, &c., as for Monday. Cup of tea.	Potato or celery. Cheese. Toast and bread, &c., as for Monday. Cup of tea.
Supper				
Cod-liver oil; rose-hip syrup. Cocoa made with milk; or milk to drink.	Cod-liver oil; rose-hip syrup. Cocoa made with milk; or milk to drink.	Cod-liver oil; rose-hip syrup. Cocoa made with milk; or milk to drink.	Cod-liver oil; rose-hip syrup. Cocoa made with milk; or Milk to drink.	Cod-liver oil; rose-hip syrup. Cocoa made with milk; or milk to drink.

DIETARIES FOR NURSING MOTHERS—*continued*

Saturday.	Sunday.	Monday.	Tuesday.	Wednesday.
5.30 a.m.				
Early morning cup of tea with bread and butter.	Ditto.	Ditto.	Ditto.	Ditto.
Breakfast				
Tomatoes and bacon. Wholemeal bread or toast. Butter. Coffee made with milk; or milk to drink.	Porridge with wheat-germ; and milk. Bread or toast. Butter. Coffee made with milk.	Tomatoes and beans on toast. Wholemeal bread and butter. Milky coffee.	Porridge with wheat-germ. Bread or toast, &c. Milky coffee.	Stewed prunes or rhubarb, with wheat-germ. Poached egg on toast. Bread, &c., Milky coffee.
Mid-morning				
Lentil soup.	Vegetable water with milk.	Marmite drink.	Split-pea soup.	Vegetable milk soup.
Dinner				
Meat loaf. Baked potato; cauliflower; white sauce; baked parsnip. Creamy brown rice with raisins. Raw apple.	Roast beef. Roast potato and kumara; silver-beet. Gooseberry fluff.	Veal croquettes. Potato; brussels sprouts; carrots or leeks. Apple sponge; boiled custard. Peanuts.	Colonial goose. Potato; swedes; spinach. Apricots and custard.	Steak and kidney pudding. Potato; cabbage or kohl rabi. Carrot whey fluff.
Afternoon				
Afternoon tea with bread and butter.	Ditto.	Ditto.	Ditto.	Ditto.
Tea				
Cheese soufflé. Potato. Bread and butter; honey or jam. Milky tea.	Stewed oysters or whitebait. Custard. Lettuce; radishes. Toast or bread, &c. Orange or grapefruit.	Fish and cheese and onion with white sauce; or kidneys on toast. Potatoes. Bread, &c. Tea.	Cold meat. Beet-root salad; Cole slaw. Bread, &c. Milk to drink.	Cottage cheese. Potato, pea, and parsley salad. Peanuts. Bread, &c. Raw apple.
Supper				
Cod-liver oil; rose-hip syrup. Cocoa made with milk; or milk to drink.	Cod-liver oil. Banana (if no effect on baby). Cocoa made with milk; or milk to drink.	Cod-liver oil; rose-hip syrup. Cocoa made with milk; or milk to drink.	Cod-liver oil; tablet of vitamin B_1. Black-currant drink with rose-hip syrup.	Cod-liver oil; rose-hip syrup. Milky cocoa; or milk to drink.

WHERE YOU GET YOUR VITAMIN C

The accompanying chart is intended to convey some idea of the relative importance of our foods as contributors to the daily diet. The quantities which furnish the amounts of vitamin C indicated by the figures are such as one might eat in the day. Let us assume that we eat about ½ breakfast-cupful of vegetables or fruit as a rule—about 3½ oz. But you wouldn't take more than ¼ cup of blackcurrants, probably; or more than about 5 sprigs of parsley. So wherever there is no amount mentioned, the amount is half-a-cupful.



Now, for good health you need about 60 to 75 milligrams of vitamin C per day. If you have a salad of lettuce, parsley, celery, and carrots, you still have not climbed very far up the chart. But a good helping of potatoes and cauliflower will probably provide you with the day's needs for this vitamin, if you are careful with the method of cooking.

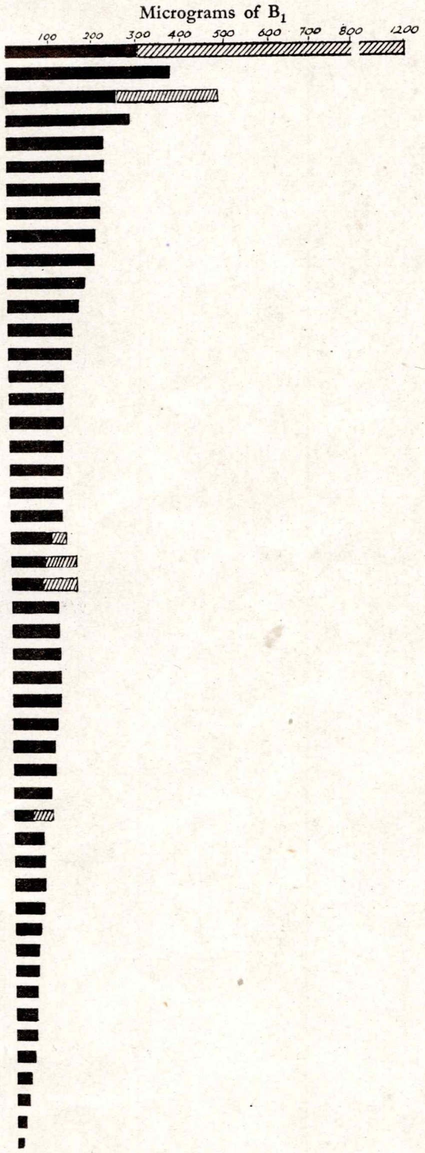
Unless otherwise stated, the values given are for raw fruits and vegetables. By careful cooking more than two-thirds of the vitamin C can be retained in the fruit or vegetable, if the juice or water is also used.

(So far, the higher figures quoted by some authorities for guavas and for hawthorn berries have not been obtained for New Zealand specimens.)

APPROXIMATE VITAMIN B_1 CONTENT OF FOODS IN DAILY PORTIONS

Food.	Amount.	Vitamin B_1 (Micograms).	Food.	Amount.	Vitamin B_1 (Micograms).
Ham and pork	3 oz.	300–1,200	Beef	3 oz.	110
Bread, wholemeal	4 oz.	380	Hazel-nuts	1 oz.	110
Bacon (3 fat : 4 lean)	2 oz.	260–470	Wheat-germ	¼ oz.	110
			Maize-meal	1 oz.	110
Milk, whole or skim	1 pint	280	Oatmeal	1 oz.	110
Peas, fresh, green	3½ oz.	230	Grapefruit	4 oz.	100
Brazil-nuts	1 oz.	230	Beans, dried haricot	1 oz.	90
Split peas	1 oz.	220	Cauliflower	3½ oz.	100
Peanuts	1 oz.	220	Prunes	2 oz.	90
Milk, dried, whole or skim	2 oz.	200	Marmite	¼ oz.	30–90
			Cabbage, leeks, or swede	3½ oz.	70
Oysters	3 oz.	200			
Liver	2 oz.	180	Carrots or tomato	3½ oz.	70
Kidney	1 oz.	170	Malt extract	1 oz.	70
Gooseberries	3½ oz.	150	Egg	2 oz.	60
Lentils	1 oz.	150	Peanut-butter	½ oz.	55
Bread, white	4 oz.	130	White flour	1 oz.	52
Potatoes	5 oz.	130	Oatmeal-water	½ pint	50
Fish	4 oz.	130	Orange-juice	2½ oz.	50
Mutton or lamb	3 oz.	90–120	Milk, dried, malted	1 oz.	50
Flour, wholemeal	1 oz.	120	Pineapple	4 oz.	50
Walnuts	1 oz.	120	Lettuce	2 oz.	40
Banana	4 oz.	120	Apple	5 oz.	30
Spinach	3½ oz.	100–120	Onions	3½ oz.	30
Brussels sprouts	3½ oz.	80–130	Dates	1 oz.	20
Beans, runner	3½ oz.	70–140	Ready-to-eat cereals	..	Negligible.

VITAMIN B_1 CONTENT OF FOODS IN SERVING PORTIONS



Ham and pork	3 oz.	
Bread, wholemeal	4 oz.	
Bacon (3 fat : 4 lean)	2 oz.	
Milk, whole or skim	1 pint.	
Peas, fresh, green	3½ oz.	
Brazil-nuts	1 oz.	
Split peas	1 oz.	
Peanuts	1 oz.	
Milk, dried, whole or skim	2 oz.	
Oysters	3 oz.	
Liver	2 oz.	
Kidney	1 oz.	
Gooseberries	3½ oz.	
Lentils	1 oz.	
Bread, white	4 oz.	
Potatoes	5 oz.	
Fish	4 oz.	
Mutton or lamb	3 oz.	
Flour, wholemeal	1 oz.	
Walnuts	1 oz.	
Banana	4 oz.	
Spinach	3½ oz.	
Brussels sprouts	3½ oz.	
Beans, runner	3½ oz.	
Beef	3 oz.	
Hazel-nuts	1 oz.	
Wheat-germ	¼ oz.	
Maize-meal	1 oz.	
Oatmeal	1 oz.	
Grapefruit	4 oz.	
Beans, dried haricot	1 oz.	
Cauliflower	3½ oz.	
Prunes	2 oz.	
Marmite	⅕ oz.	
Cabbage, leeks, or swede	3½ oz.	
Carrots or tomato	3½ oz.	
Malt extract	1 oz.	
Egg	2 oz.	
Peanut-butter	½ oz.	
White flour	1 oz.	
Oatmeal-water	½ pint	
Orange-juice	2½ oz.	
Milk, dried, malted	1 oz.	
Pineapple	4 oz.	
Lettuce	2 oz.	
Apple	5 oz.	
Onions	3½ oz.	
Dates	1 oz.	
Cheese	1 oz.	
Ready-to-eat cereals		Negligible

NOTE.—Vitamin B_1 is soluble in water—*e.g.*, vegetable water, whey. It is readily destroyed by alkali—*e.g.*, baking-soda. Its destruction is facilitated by temperatures over boiling-point. (The interior of a loaf of bread does not go above this temperature during baking.)

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